

**EazyRF V4.80**  
**Intermodulation calculation**

**User Guide**



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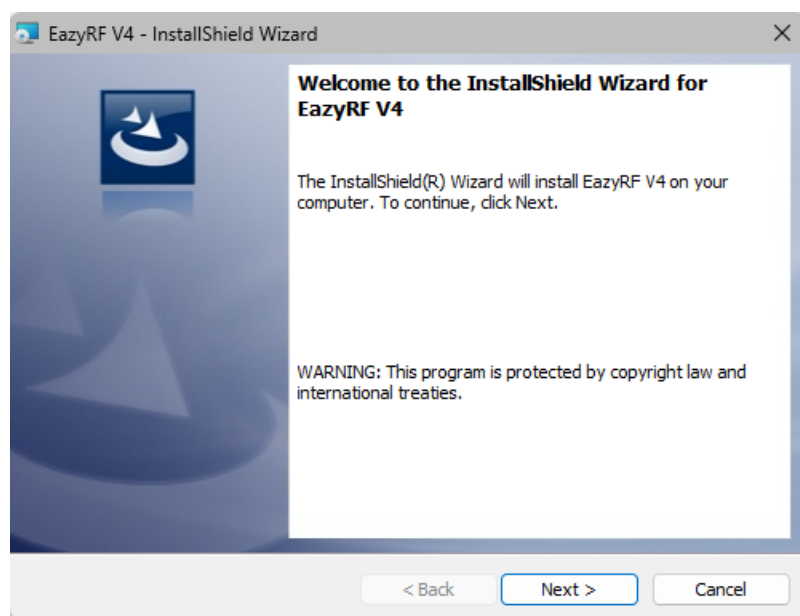
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## 1 - Installation and license

### 1.1 Installation

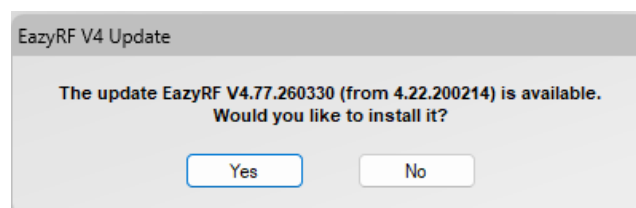
To install EazyRF, simply download the 32-bit or 64-bit installation file “EazyRF\_V4\_Setup.exe” from the website: <https://eazyrf.com/english/windows.html#Telechargements>. You must download the 32-bit or 64-bit version depending on your version of Windows to ensure that the USB dongle driver works properly.

Run the installation file from your hard drive:



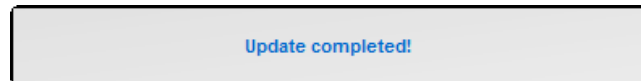
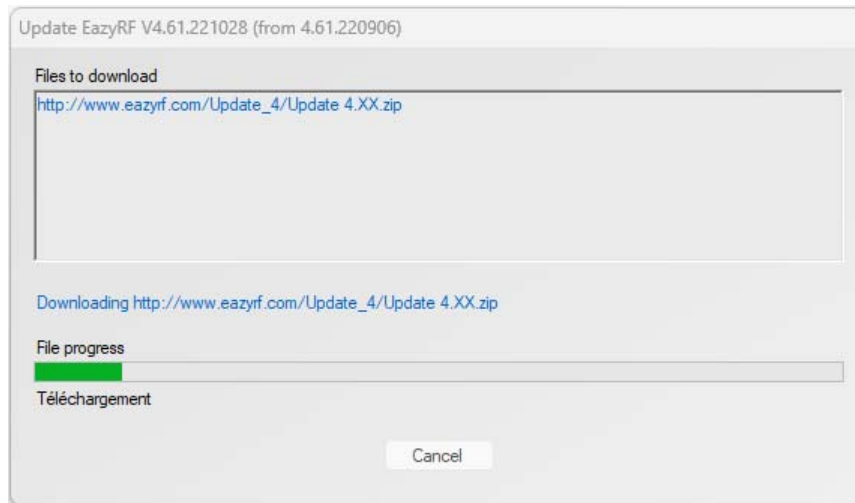
You must accept the security prompts displayed by Windows. After installation, launch EazyRF and accept the Internet access prompt displayed by the Windows Firewall.

An update is available; please accept it:



You will be in demo mode if you do not have a license (maximum of 20 frequencies).

By accepting the update, the EazyRF window closes and the application update starts:



Afterward EazyRF restarts and the update is completed.

You will be in demonstration mode if you do not have a license (maximum of 20 frequencies).

There is no installation file for updates; they are automatically provided when you start the program.

## 1.2 Purchase a license

After purchasing a license on the website [eazyrf.com](http://eazyrf.com), you will receive an email to confirm your order. With the purchase of a license on USB key, you are entitled to a license file as well.

Remember that the license file is linked to the hardware configuration, so it is compatible with one and only one computer.

Using the USB remains the most flexible method, without any hardware limit.

So, you will receive an email confirming your purchase with the license number assigned to your name and email address, names provided during the PayPal transaction:

# EazyRF V4

## Frequencies calculation software for RF equipment

Hi Nouveau\_client,

Your payment has been received. Thanks.

Here is your license number linked to the email address:

0000-0000-0000-0000-0000-0000

usager@email.com

First, you need to install EazyRF from the installation file: [EazyRF V4](#).

After installation, start EazyRF and accept to do the proposed update, otherwise you will not be able to continue.

If you have purchased more than one license or if your email address is not that one of the user, do not continue the installation and contact me [regis@eazyrf.com](mailto:regis@eazyrf.com)

To enter your license number and your e-mail address, use the Options/License Management commands and click on "License request".

An email will be sent to the license file creation server. You should receive an email at the address provided with the license file attached.

You just have to copy the EazyRF.license file in the EazyRF installation directory, ie C:\Program Files (x86)\EazyRF V4. Restart EazyRF to activate your license.

If you have purchased a USB key, shipping details will be sent to you as soon as possible.

The invoice will be sent to you by email.

If you have any questions, do not hesitate to contact me [regis@eazyrf.com](mailto:regis@eazyrf.com)

Best regards.

Regis

PS. This email was sent by an automated system that does not read incoming messages.

Thereafter, you just need to enter the license number in EazyRF, Options / License Management:

Options - Manage License

**General**  
TV Chnls - SECAM  
Frequencies Type  
Startup / Global

**Devices**  
Devices list  
Update

**Devices Group**  
Devices groups  
Update

**TX Power**  
Adjust Influence

**License**  
License Management

Your copy of EazyRF can be activated via a license file. To apply, click the Request License button and an email will be sent to eazyrf.com. You will receive a valid license file for a single system configuration.

Hardware ID: A1BE-6BA3-3187-B757-C969 (A1BE-5D40-3187-2919-2CAC)

License No: KR 60

Your Email: regis@eazyrf.com

Username: EazyRF

License Request

After entering the license number, the email address and username will be displayed automatically from the information obtained by PayPal. You can change the username and email address. Click on "Request License". An email will be sent to the entered address with a license file attached:

# EazyRF V4

## Frequencies calculation software for RF equipment

Hi Nouveau\_client,

You will find your license file attached for the serial number:  
0000-0000-0000-0000-0000-0000

You just have to copy the EazyRF.license file in the EazyRF installation directory, ie C:\Program Files (x86)\EazyRF V4.  
Restart EazyRF to activate your license.

If you have any questions, do not hesitate to contact me [regis@eazyrf.com](mailto:regis@eazyrf.com)

Best regards.  
Regis

PS. This email was sent by an automated system that does not read incoming messages.

### 1.3 License renewal, new computer

You can request a new license file and receive it by email a few seconds later. If you have a USB key or a license file not assigned to the computer used, the license number will be displayed automatically. Your email address will only be displayed for those who have purchased a license via the previous procedure, so during future requests only.

Options - Manage License

**General**  
TV Chnls - SECAM  
Frequencies Type  
Startup / Global

**Devices**  
Devices list  
Update

**Devices Group**  
Devices groups  
Update

**TX Power**  
Adjust Influence

**License**  
License Management

Your copy of EazyRF can now be activated via a license file. To apply, click the Request License button and an email will be sent to eazyrf.com. You will receive a valid license file for a single system configuration.

Hardware ID: A1BE-6BA3-3187-B757-C969 (A1BE-5D40-3187-2919-2CAC)

Your Email: regis@eazyrf.com

No Licence: KR 60

Username: EazyRF

License Request

After installing EazyRF on a new computer, if you don't have a USB key, you must copy your old license file into the EazyRF installation directory (C:\Program Files (x86)\EazyRF V4) to validate your license number and username. The license number can only be validated for new customers. The email address can be changed but not the username.

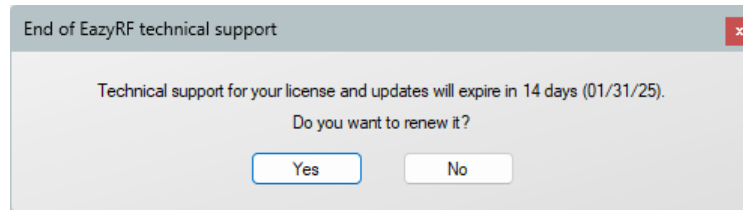
**Warning:** This automatic renewal procedure comes with an important restriction; you can only request a new license file on different computers at a minimum interval of 30 days in order to avoid the multiplication of active licenses simultaneously. An old license will be automatically deactivated. On the same computer used for the creation of the last license, there are no renewal restrictions.

## 1.4 Renewal of Technical support

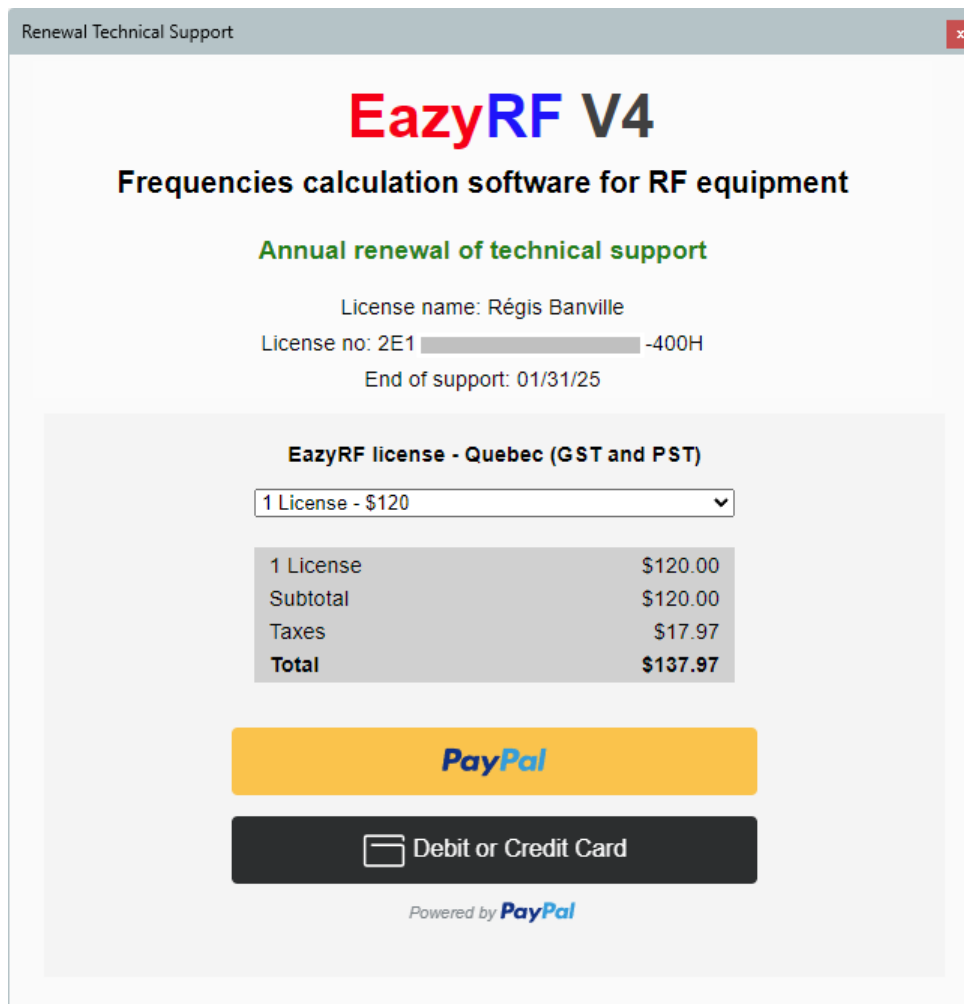
It is possible to purchase annual technical support renewal from EazyRF. Technical support includes customer support, updates, and automated license file creation.

When purchasing a license, 24 months of technical support are included. Then, the support must be renewed annually.

When there are only 28 days left before technical support expires, a new window will appear on startup:



It is displayed during the period of 28 days before the end of support until 28 days after (closes automatically after 15 seconds). By accepting the renewal, the payment module is displayed:



EazyRF applies taxes if necessary, depending on the user's place of residence. For residents outside of Canada, no taxes apply.

If a user has more than one license with the same renewal date, a list of license numbers is displayed, and the renewal price is adjusted:

License name: Jacques (3 lic)

KR26--3160  
 KR26--3163  
 KR26--3164

End of support: 02/05/25

**EazyRF license - Quebec (GST and PST)**

3 Licenses and more - \$240

3 Licenses and more	\$240.00
Subtotal	\$240.00
Taxes	\$35.94
<b>Total</b>	<b>\$275.94</b>

Outside the period of plus or minus 28 days from the end of support date, the payment module can be called by double-clicking on the end of support date in the “About” window:

License granted to:  
 Serial Nb: KR26-4A; 3160 (USB key)

Warning: this program is protected by the Copyright Act. Any reproduction or distribution of the software, or by any means whatsoever, is strictly prohibited.

**Professional Edition**

eazyrf.com  
 regis@eazyrf.com  
 514-922-5818

**EazyRF V4**

History Version 4.72.250103

Connected to eazyrf.com

24 Processors All rights reserved © Régis Banville 2025

**Upd Exp: 02/05/25**

## 2 - Presentation

EazyRF 4.80 and later now uses “Zones” to organize groups, which helps streamline the interface; the more groups there are in a document, the more complicated navigation becomes. Organizing by zones makes the software easier to use.

The same features are still available: ATSC, PAL, and SECAM video standards; reading of files created by frequency scanners from various manufacturers; with this data, you can create interference lists or TV channel lists; and modules such as Global View, Detailed View, Frequencies Plan, Spectrum View, and On Tour.

EazyRF still requires a USB key to validate the username and activation code. The key must remain inserted while the program is running. A license file can also be used, but it is tied to a specific hardware configuration (one and only one computer). More information is available on the [eazyrf.com](http://eazyrf.com) website.

The USB key is available in two formats, USB-A (standard) and USB-C:



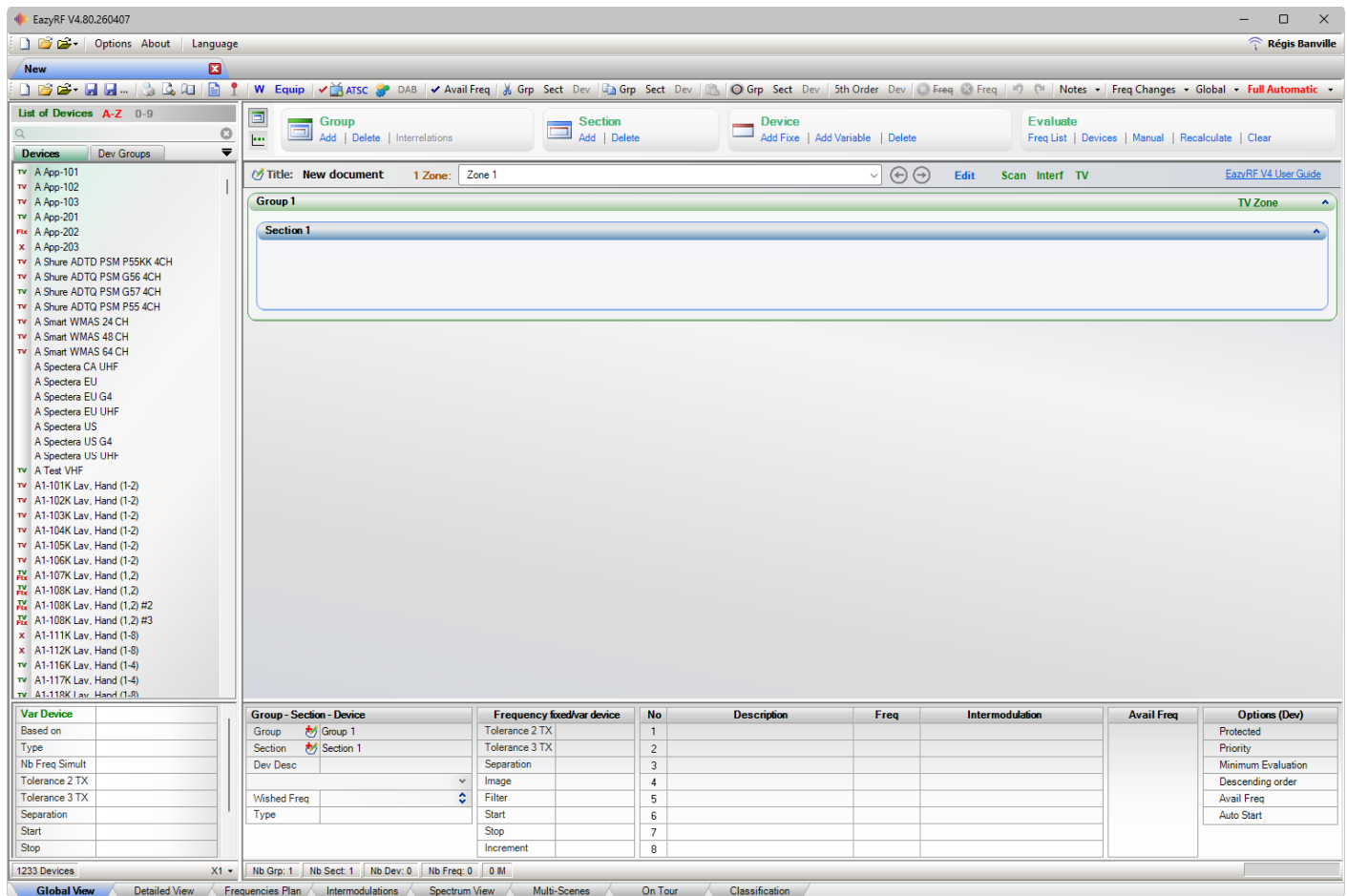
To install EazyRF, download the application on the site: : <http://eazyrf.com/english/windows.html>. It is necessary to install the version adequate to your operating system Windows (32 or 64 bits), otherwise the drivers of the USB key will not work.

A new directory is created when you install version 4, which is C:\Program Files (x86)\EazyRF V4. Versions 3 and 4 can be installed on the same computer (version 3 is installed in the C:\Program Files (x86)\EazyRF V3.2 directory).

Now look at this environment.

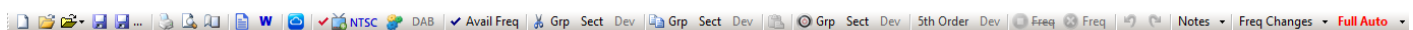
### 2.1 Launching

At starting up the following screen appears:

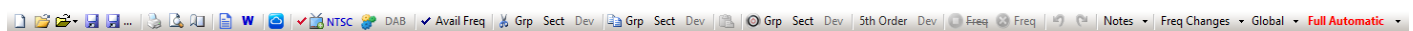


By default, EazyRF uses the maximum available screen space. The reduction of the image in this guide does not allow to see adequately the contents. EazyRF fits automatically with the available screen size (the minimal resolution is 1366 x 768).

According to the width of the screen, the buttons of the toolbar adapt themselves. With the minimal resolution, it takes this shape:



Or if the resolution is higher:



According to the available width, the least used controls are removed (more details in Global View).

The detail zone of a device (Global View) also varies with the height of the screen. In its simplest form:

Group - Section - Device	Frequency fixed/var device	No	Description	Freq	Intermodulation	Avail Freq	Options (Dev)
Group  Group 1	Tolerance 2 TX	1					Protected
Section  Section 1	Tolerance 3 TX	2					Priority
Dev Desc	Separation	3					Minimum Evaluation
	Image	4					Descending order
Wished Freq	Filter	5					Avail Freq

Or in its most detailed form:

Group - Section - Device	Frequency fixed/var device	No	Description	Freq	Intermodulation	Avail Freq	Options (Dev)
Group  Group 1	Tolerance 2 TX	1					Protected
Section  Section 1	Tolerance 3 TX	2					Priority
Dev Desc	Separation	3					Minimum Evaluation
	Image	4					Descending order
Wished Freq	Filter	5					Avail Freq
Type	Start	6					Auto Start
	Stop	7					
	Increment	8					

At starting up, the "Global View" is activated. The View Bar components (bottom completely) allow to change views:



The "Global View" component is the overview of all devices in the document. The chapter 18 explains it in detail. The "Detailed View" display the frequencies of all devices, see chapter 19.

The component "Frequencies Plan" display the details of all devices continuously (like an Excel spreadsheet) and allow changes to the display (text size, color, etc..). See chapter 20.

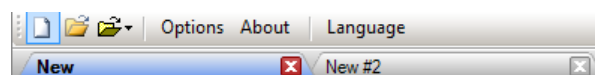
The "Intermodulations" view shows the frequency spectrum occupied by all devices. It consists of an overview and a detailed view. The detailed view shows the intermodulation between the frequencies. Moreover, this view allows you to edit the frequency by moving them with the mouse. This component also allows for editing of devices of the document (adding, deleting). More detail in chapter 21.

The "Spectral View" visualize the spectral space occupied by all devices and TV channels. More details in chapter 22.

The component "On Tour" is responsible for the preparation of a compatible frequency plan on tour, i.e. in several cities. More details in chapter 23.

Finally, the component "Classification" shows the order of evaluation of devices, details in chapter 24.

EazyRF is a software that allows you to edit multiple documents simultaneously. Control bar at the top part of the application is used to manage the creation of additional documents (new or opening):



These commands always add a new tab to the documents bar.

In addition, the only system commands are found in this area: "Options", "About" and "Language".

The "Options" command will be explained in chapter 25.

The "About" command displays the Welcome window:



The "History" command displays the history of EazyRF updates:

EazyRF V4 update history

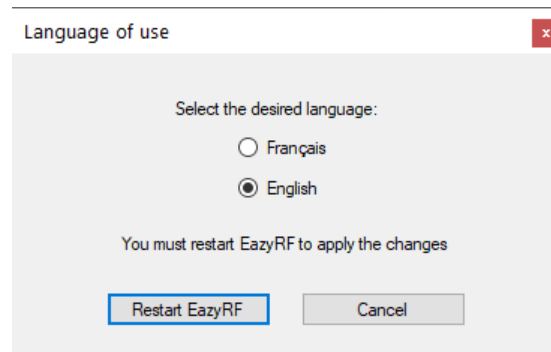
## EazyRF V4

### Update history

Date	Version	Detail
04/09/26	4.80.260409	Groups classification by Zones
09/26/25	4.77.250926	Multi-band devices
04/08/25	4.76.250408	WMAS Devices Management Sennheiser Spectera and variable spacing between independent groups
02/16/25	4.75.250216	WMAS Devices Management Shure ADPSM
01/20/25	4.73.250120	Technical support renewal, list of markers with group, section or device colors
12/04/23	4.72.231204	Modified video standard country: Australia and New Zealand
08/14/23	4.71.230814	Group interferences
07/10/23	4.70.230710	New group interrelations, group scans, section or group search, new device list
04/19/23	4.68.230419	Managing TV Channels on Groups
03/01/23	4.67.230301	Reading IAS files, search devices, Band 941-960 MHz
02/17/23	4.66.230217	Export/Import/Delete devices, Save expand/collapse document liste, Band 71 ATSC support
02/01/23	4.65.230201	Automation of license file creation
12/12/22	4.63.221212	Changes to Video Standard Nomenclature
12/05/22	4.62.221205	Frequencies spectrum manager
11/16/22	4.61.221116	Create marker list for WinRadio
09/09/22	4.61.220909	Multi-Scenes: Day Completed, Day in Solo
08/05/22	4.61.220805	Simplified TV channels (SECAM), Background color appearance, Multi-Scenes: Devices on hold, background color display,...
05/23/22	4.60.220523	Import/Export Devices Groups. Partial Evaluation in section in Multi-Scenes
03/28/22	4.57.220328	Sampling files edition
01/04/22	4.56.220104	Recalculation of the frequencies of a standard or multi-scenes document
12/01/21	4.55.211201	Device group V2, On Tour scanning management for each city
09/05/21	4.50.210905	Reading data files Shure AXT600 .sd3, .sdb2 and .sdb
08/22/21	4.50.210822	Device, section, group and document notes. Multi-Scenes: used frequencies.
05/31/21	4.42.210531	Compressed data files
05/27/21	4.41.210527	RF Explorer PLUS SLIM compatibility, reading .rfe V5 file
04/26/21	4.41.210426	On Tour: modifications cities list editor
03/25/21	4.40.210325	Device editor: Next./Previou, analysis according to samples. Calculation of frequencies in function of sampling data. Updat...
02/15/21	4.32.210215	ATSC TV channels: reject 600 MHz band with two duplex zones
12/01/20	4.31.201201	Delete data from a Multi-Scene document
11/24/20	4.31.201124	Delete data from a document
06/02/20	4.30.200602	Scans file manager
04/02/20	4.25.200402	View detachment to a window or second screen, Auto-Interferences between Scenes
02/15/20	4.22.200215	Electronic signature of files
01/30/20	4.22.200120	Dev and Grp dev from internet sorted by default in descending order of date
12/11/19	4.22.191211	Read update files of devices and device groups via the internet
11/04/19	4.21.191104	Read RF Explorer directly
10/23/19	4.20.191023	Read sample data from Shure shw files
10/06/19	4.20.191006	Change device type on protected device, tv channels print in report
10/04/19	4.20.191004	Sennheiser - Shure - Wisycom - Lectrosionics equipments
08/13/19	4.12.190813	Multi-Scenes: editable Auto-Interferences, Device editor: complete intermodulation detail
07/29/19	4.11.190729	Allocation TV channels frequencies in France, DAB import of channels according to geolocation
07/25/19	4.10.190725	DAB, Multi-Scenes Header print
02/11/19	4.01.190211	Device editor Undo/Redo
12/18/18	4.00.181218	Extended background color
12/10/18	4.00.181210	Background color
12/05/18	4.00.181205	EazyRF V4 launch

OK

The "Language" command :

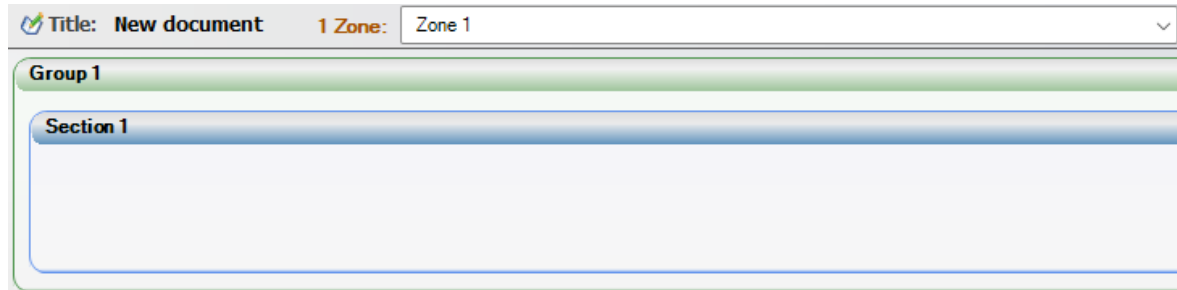


It allows you to change the language of the application. Note that you must restart EazyRF to apply the change.

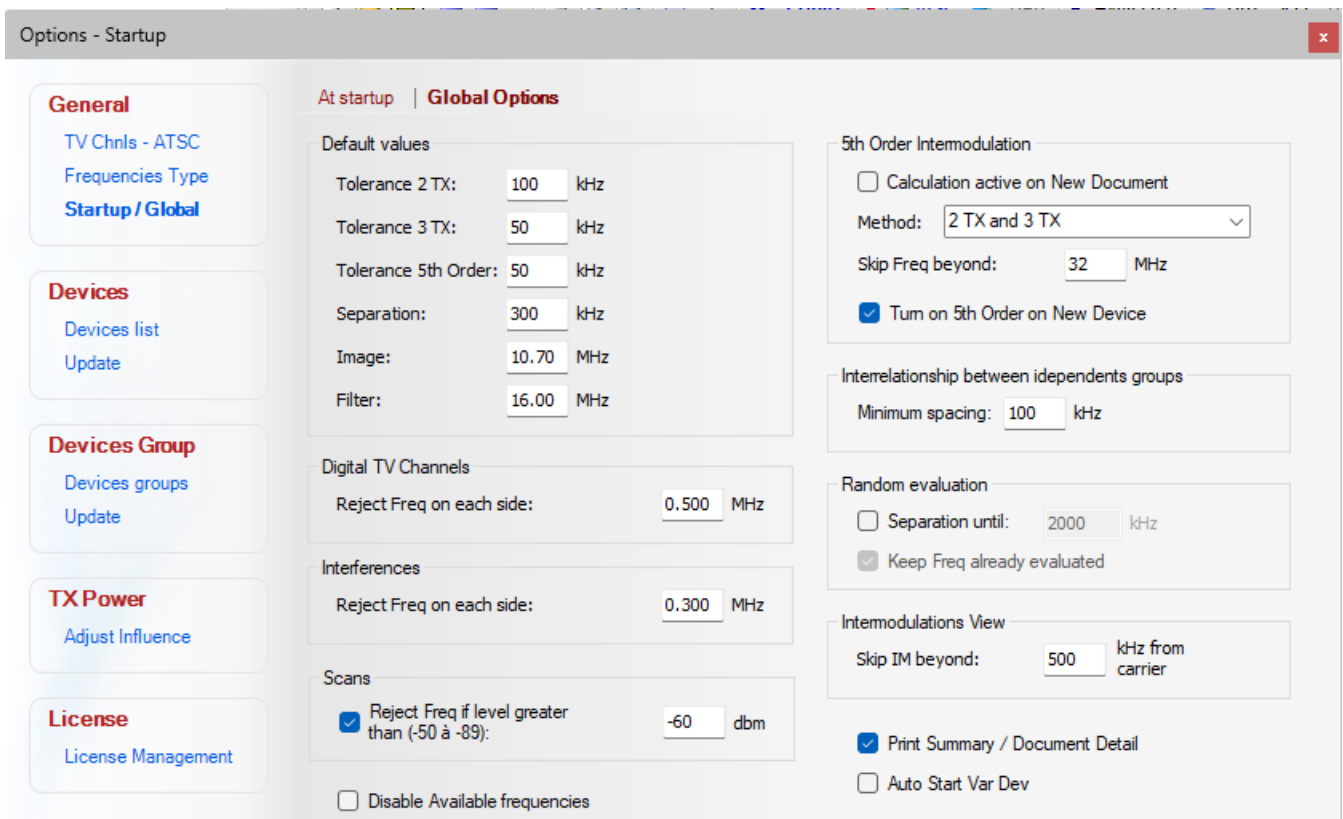
### 3 - Document

An EazyRF document consists of several elements: zones, groups, sections, devices, TV channels, scans, interferences, settings, etc.

When EazyRF starts up, it creates a new document containing a zone and a group within that zone, named “Zone 1” and “Group 1,” respectively.



The document uses the global settings as default, as well as the global TV channels (Options menu):



ATSC	PAL	SECAM	COUNTRY
Reject TV channels frequencies (in MHz)			
02 (54-60)	✓ 19 (500-506)	36 (602-608)	53 (704-710)
03 (60-66)	20 (506-512)	✓ 37 (608-614) RA	54 (710-716)
04 (66-72)	✓ 21 (512-518)	38 (614-620)	55 (716-722)
05 (76-82)	22 (518-524)	39 (620-626)	56 (722-728)
06 (82-88)	23 (524-530)	40 (626-632)	57 (728-734)
07 (174-180)	24 (530-536)	41 (632-638)	58 (734-740)
08 (180-186)	25 (536-542)	42 (638-644)	59 (740-746)
09 (186-192)	✓ 26 (542-548)	43 (644-650)	60 (746-752)
10 (192-198)	27 (548-554)	44 (650-656)	61 (752-758)
✓ 11 (198-204)	28 (554-560)	45 (656-662)	62 (758-764)
✓ 12 (204-210)	✓ 29 (560-566)	46 (662-668)	63 (764-770) PS
13 (210-216)	30 (566-572)	47 (668-674)	64 (770-776) PS
14 (470-476)	✓ 31 (572-578)	48 (674-680)	65 (776-782)
✓ 15 (476-482)	32 (578-584)	49 (680-686)	66 (782-788)
16 (482-488)	33 (584-590)	50 (686-692)	67 (788-794)
✓ 17 (488-494)	34 (590-596)	51 (692-698)	68 (794-800) PS
18 (494-500)	✓ 35 (596-602)	52 (698-704)	69 (800-806) PS
<input checked="" type="checkbox"/> Reject Frequencies 614 to 698 MHz - Channels 38 to 51		<input checked="" type="checkbox"/> Duplex Gap 614-616 MHz	
<input checked="" type="checkbox"/> Reject Frequencies 698 to 806 MHz - Channels 52 to 69		<input checked="" type="checkbox"/> Duplex Gap 657-663 MHz 653-663 M	

See chapter 25 for full details on the options.

Global settings are used as default values and can be modified for each document:

Evaluation parameters of the document

**Power Level**

Influence:	2 TX Tol	3 TX Tol	5 TX Tol
1: 1-50 mw	0 kHz	0 kHz	0 kHz
2: 51-150 mw	25	25	0
3: 151-400 mw	75	50	25
4: > 400 mw	125	75	50

**Digital TV Channels**

Reject Freq on each side: 0.500 MHz

**Interferences**

Reject Freq on each side: 0.300 MHz

Auto Interferences limit: 0.100 MHz

**Scans**

The frequency reject level is now with the sample file manager.

**5th Order Intermodulation**

Tolerance 5th Order: 50 kHz

Method: 2 TX and 3 TX

Skip Freq beyond: 32 MHz

Turn on 5th Order on New Device

**Interrelationship between independents groups**

Minimum spacing: 100 kHz

**Random evaluation**

Separation until: 2000 kHz

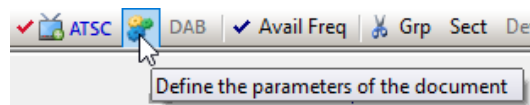
Keep Freq already evaluated

**Auto Start Freq**

Variable Dev

Default OK Cancel

Global view and Detail view command:



TV channels of the document (regardless of global channels)

ATSC | PAL | SECAM | COUNTRY

Reject TV channels frequencies (in MHz)

02 (54-60)	✓ 19 (500-506)	36 (602-608)	53 (704-710)
03 (60-66)	20 (506-512)	✓ 37 (608-614) RA	54 (710-716)
04 (66-72)	✓ 21 (512-518)	38 (614-620)	55 (716-722)
05 (76-82)	22 (518-524)	39 (620-626)	56 (722-728)
06 (82-88)	23 (524-530)	40 (626-632)	57 (728-734)
07 (174-180)	24 (530-536)	41 (632-638)	58 (734-740)
08 (180-186)	25 (536-542)	42 (638-644)	59 (740-746)
09 (186-192)	✓ 26 (542-548)	43 (644-650)	60 (746-752)
10 (192-198)	27 (548-554)	44 (650-656)	61 (752-758)
✓ 11 (198-204)	28 (554-560)	45 (656-662)	62 (758-764)
✓ 12 (204-210)	✓ 29 (560-566)	46 (662-668)	63 (764-770) PS
13 (210-216)	30 (566-572)	47 (668-674)	64 (770-776) PS
14 (470-476)	✓ 31 (572-578)	48 (674-680)	65 (776-782)
✓ 15 (476-482)	32 (578-584)	49 (680-686)	66 (782-788)
16 (482-488)	33 (584-590)	50 (686-692)	67 (788-794)
✓ 17 (488-494)	34 (590-596)	51 (692-698)	68 (794-800) PS
18 (494-500)	✓ 35 (596-602)	52 (698-704)	69 (800-806) PS

Reject Frequencies  
 Reject Freq 614 to 698 MHz (Ch 38 to 51), Duplex Gap 614-616 MHz, Duplex Gap 657-663 MHz.  
 Reject Freq 698 to 806 MHz (Ch 52 to 69), Reject Freq 952 to 952.8 MHz and 956....

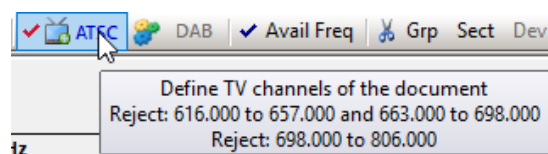
The channels in blue correspond to the global channels.

68 ATSC channels | 11 local channels

Buttons: Import Scan, Import CH, Clear CH, CH Names, Read CH, Save CH, OK, Cancel

The channels in blue are the channels selected in the global settings.

Command:



See the following chapters for instructions on how it works.

### 3.1 Document Management

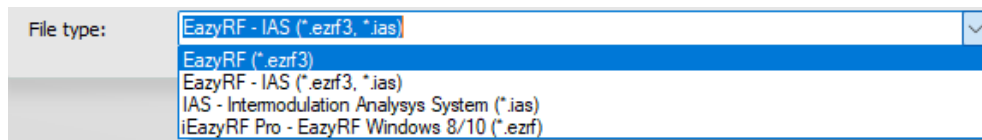
The toolbar in each view lets you create a document, open one, or save it:



EazyRF automatically saves a document every 10 minutes (if the document has been modified) under the name: AutoSave - File Name. When you open an "AutoSave" document, the original name is restored. This backup allows you to restore the previous version if a problem occurs. This backup is independent of the user's own backups, so you could restore a previous version if you saved a document with an error, up to ten minutes prior.

### 3.1.1 IAS Files

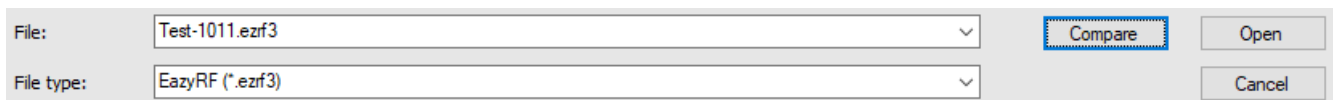
The File Type option opens documents created by IAS, iOS (iEazyRF Pro) or by the touch screen version of Windows (EazyRF):



See Appendix 1 for details.

### 3.1.2 Files Compare

The file manager makes it possible to compare two documents in order to display the differences between the two versions with the "Compare" command:



The selected file is compared to the already opened file, which gives for example:

Documents compare

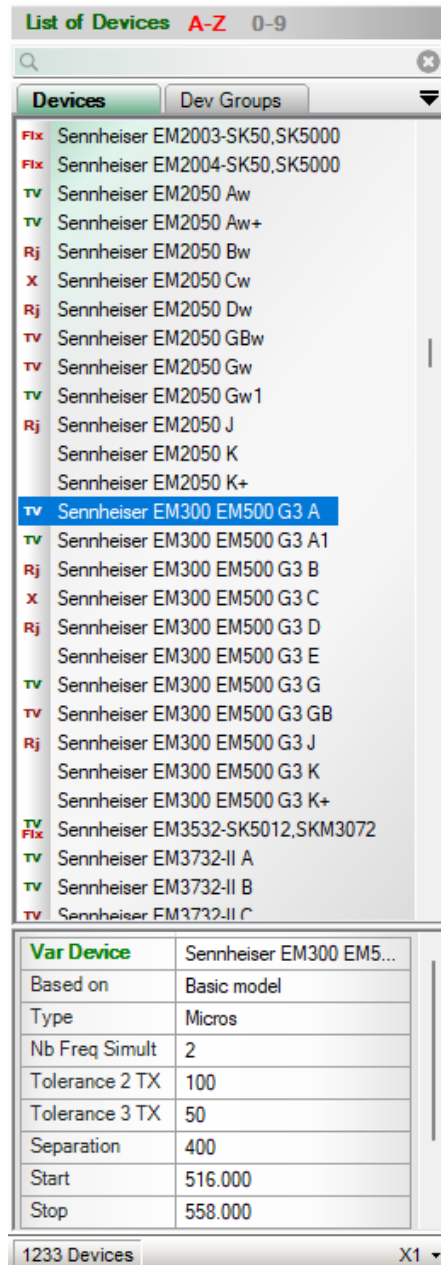
Test-1011	Test-1012
<b>Group 1</b>	<b>Group 1</b>
<b>Section 1</b>	<b>Section 1</b>
<b>#1 - Sennheiser 3732-B</b>	<b>#1 - Sennheiser 3732-B</b>
518.500	518.500
518.800	532.500
519.200	519.200
519.700	541.300
520.050	520.050
520.500	520.500
521.050	521.050
522.650	522.650
	<b>#1 - Sennheiser 3732-D</b>
	614.500
	614.800

Save PDF Cancel

The result of the comparison can be saved in PDF format with the command "Save. PDF ».

### 3.2 Devices list

There are two types of EazyRF devices: variable-frequency devices and fixed-frequency devices.

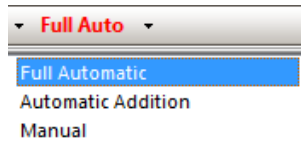


A device is said to be of the variable type when frequencies can be set between a Start value and a Stop value in predetermined increments. A device is of the fixed type when frequencies are predetermined (a choice of X frequencies), often adjustable via a rotary selector.

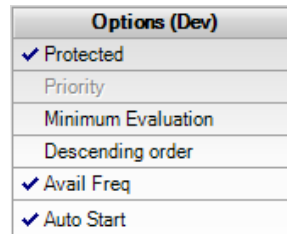
See chapter 7 for full details.

### 3.3 Calculation method

EazyRF uses three operation modes selectable with the command:



First of all, every device can be "protected", the frequencies allocated can only be changed by the user. This option is enabled by:

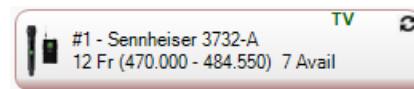


In Full Automatic mode, all devices that are not "Protected" are sorted by "Start" frequency (devices with fixed frequencies are sorted before those with variable frequencies if the frequencies are close to each other). Subsequently, depending on the requested operation (which device is involved), EazyRF retains only the devices that need to be recalculated.

In "Automatic Addition" mode, only the modified or added device is recalculated.

"Manual" mode allows the user to determine the frequencies to use (EazyRF still provides suggestions for available frequencies).

When evaluating a device, an animation indicates which device is being recalculated:



In addition, the status bar displays the calculation steps:



The commands:

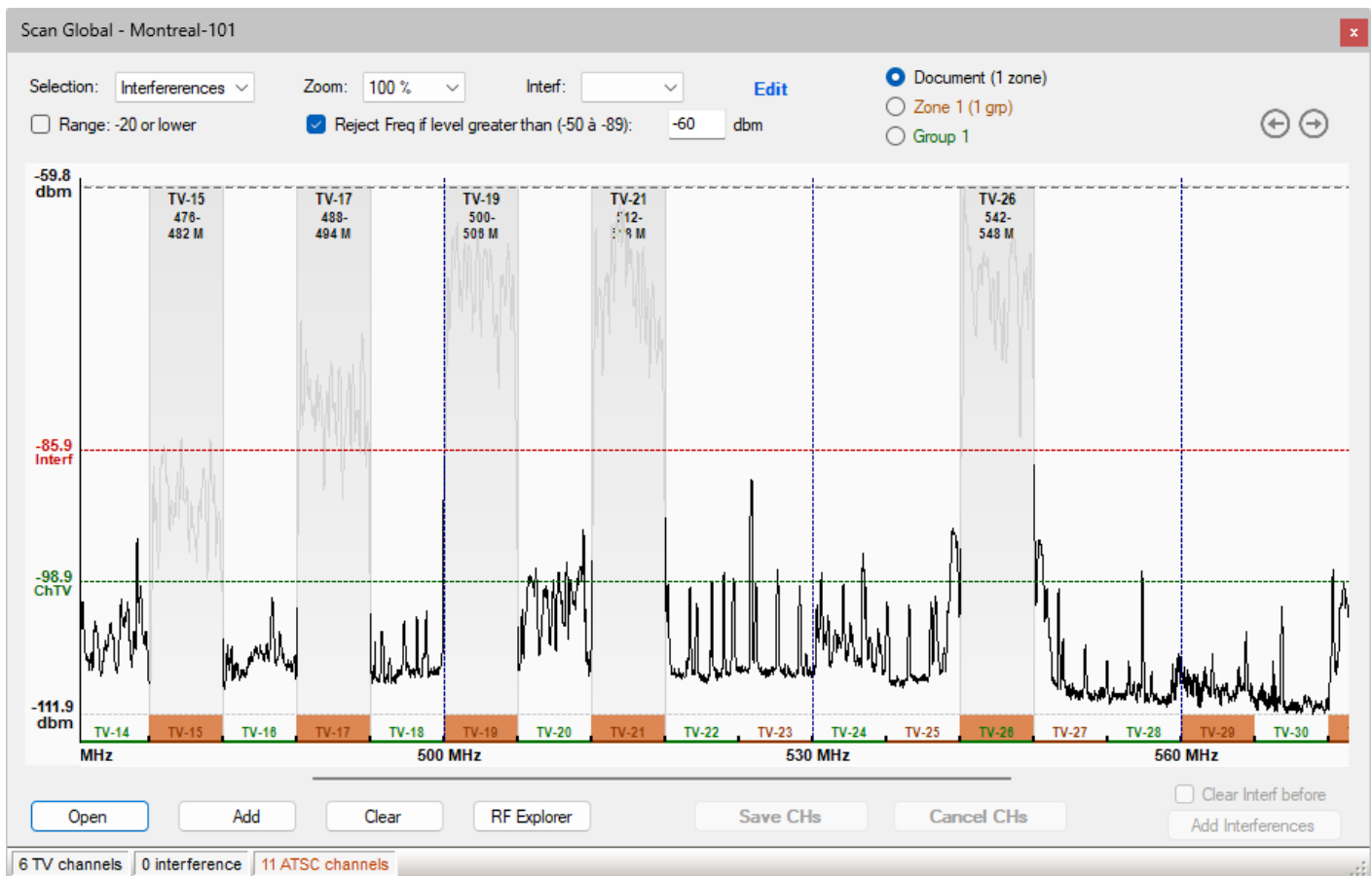
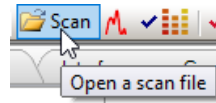


Can be used to request a manual recalculation.

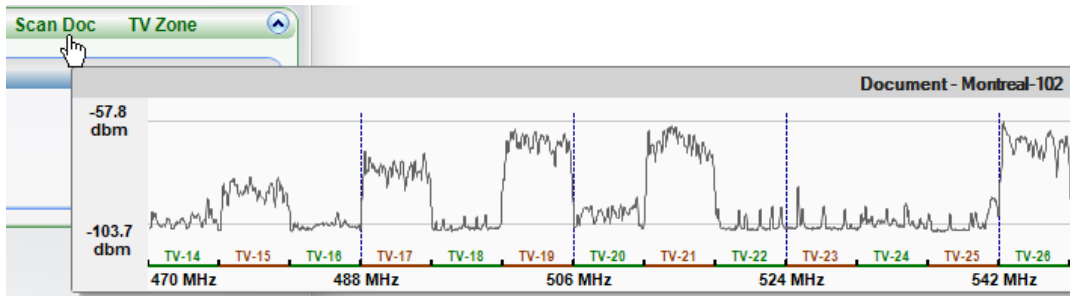
### 3.4 Document scan

The operation of scans is explained in more detail in Chapter 21.

Scan for a document is managed in the “Intermodulations” view using the following command:



The "Scan" indicator for groups displays the source of the scan:



The editor allows you to manage the sampling of the document, regions, and groups.

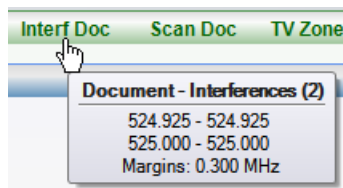
### 3.5 Document interferences

The way interference works is explained in more detail in Chapter 21.

Interference within a document is managed by the editor in the "Intermodulation" view:

Interferences - Document (2)		Interferences - Zone		Interferences - Group	
No	Start Frequency	Stop Frequency			
1	524.925	524.925			
2	525.000	525.000			

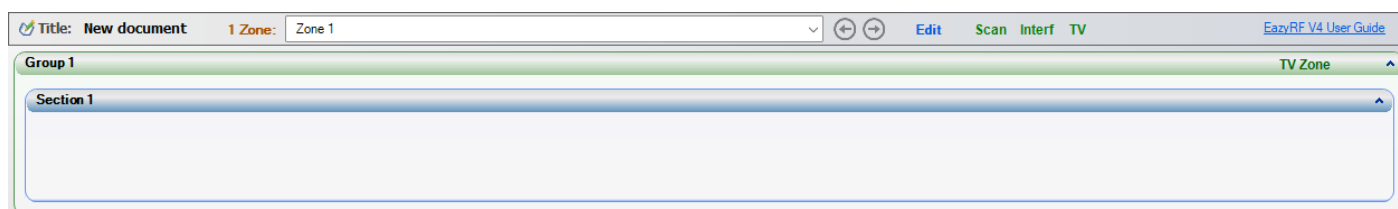
The "Interf" indicator for groups displays the source of the interference:



## 4 - Zones

When a document is created, a zone is added along with a group, with the default names “Zone 1” and “Group 1.”  
When opening a document created with a version prior to EazyRF 4.80, all groups are assigned to “Zone 1.”

The layout in the global view:



Zones are managed using the following commands:



The “Edit” command allows you to manage the creation of zones: adding, deleting, assigning groups to zones, and setting interrelationships. More details are provided in the following section.

You can navigate from one zone to another either via the drop-down list for direct access or using the Previous Zone or Next Zone arrows.

Only groups belonging to a zone are displayed in all views. This greatly simplifies navigation for documents with many groups.

The “Scan,” “Interf,” and “TV” commands allow you to define these data for zones, groups, or the document, providing an overview of all the data.

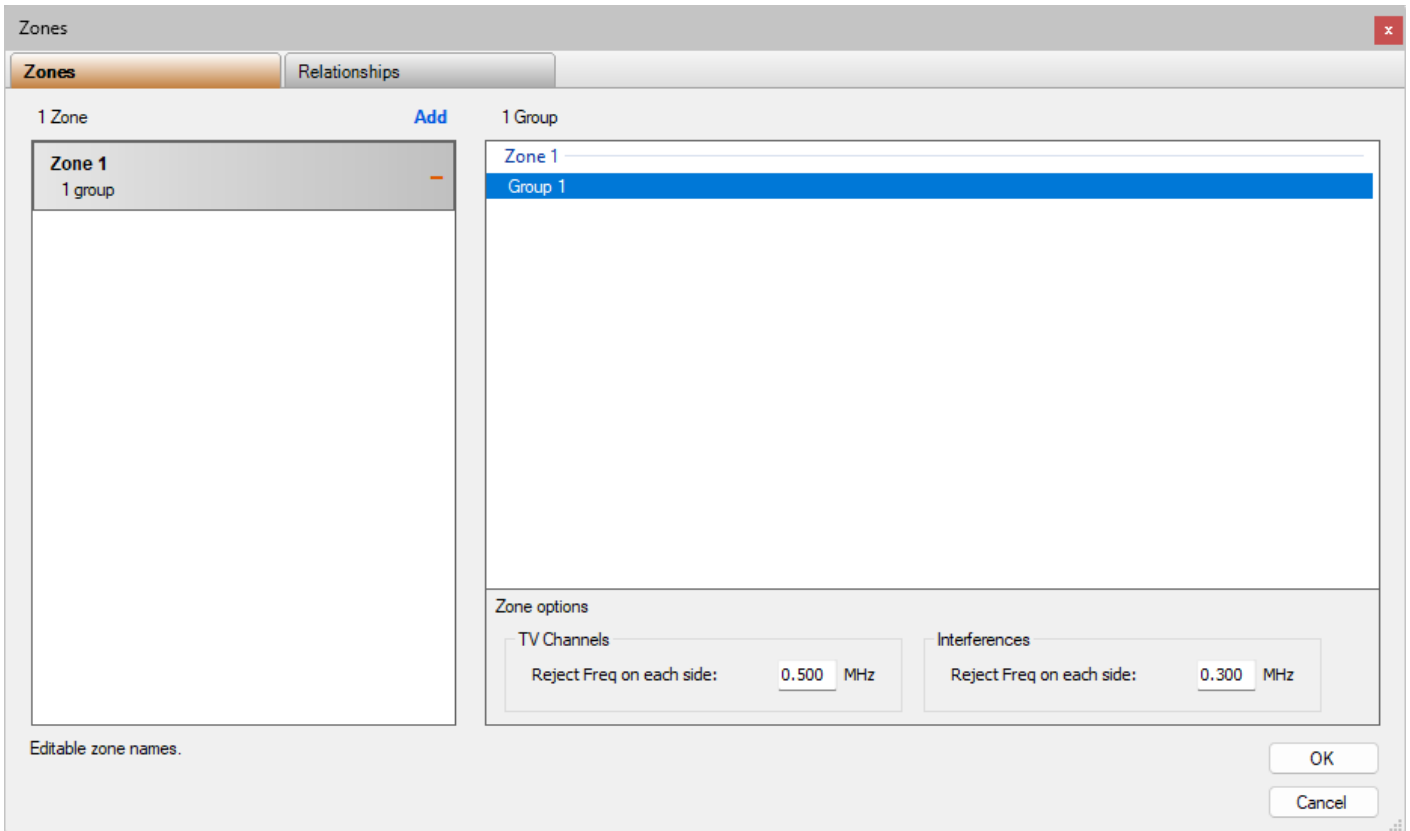
The “Frequency Plan,” “Intermodulations,” “Spectral View,” and “On Tour” views have a simplified manager:



After selecting a zone, groups are added to the current zone. A group can be moved using the zone manager or via the clipboard.

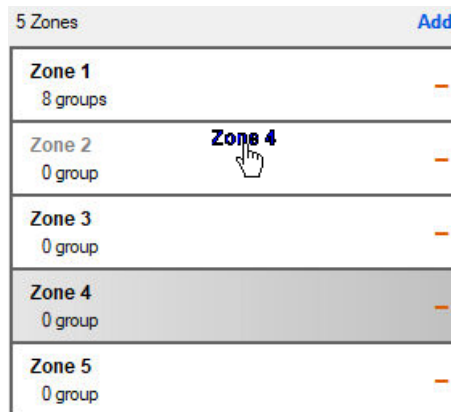
### 4.1 Editing zones

The “Edit” command opens the zone editor:

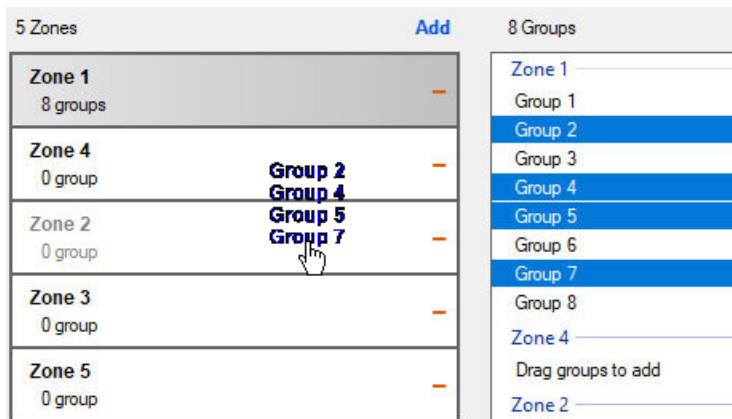


The “Add” command, as its name suggests, allows you to add zones; a zone is added after the selected zone. To change a zone’s name, simply click on the name and edit it.

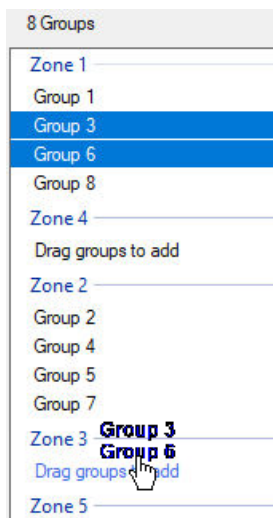
You can move a zone by dragging it:



To add groups to a zone, simply drag them from the “Groups” section to the desired zone:



Or directly in the groups section:



The “-” command of zones allows you to delete a zone; note that the zone must not contain any groups.

You can set the safety margins for TV channels and interference for each zone:



The list of zones displays the changes made to the margins:

<b>Zone 4</b> 0 group	TV: 0.300	—
<b>Zone 2</b> 4 groups	Interf: 0.250	—
<b>Zone 3</b> 2 groups	TV: 0.400 Interf: 0.400	—
<b>Zone 5</b> 0 group		—

## 4.2 Relationships between Zones

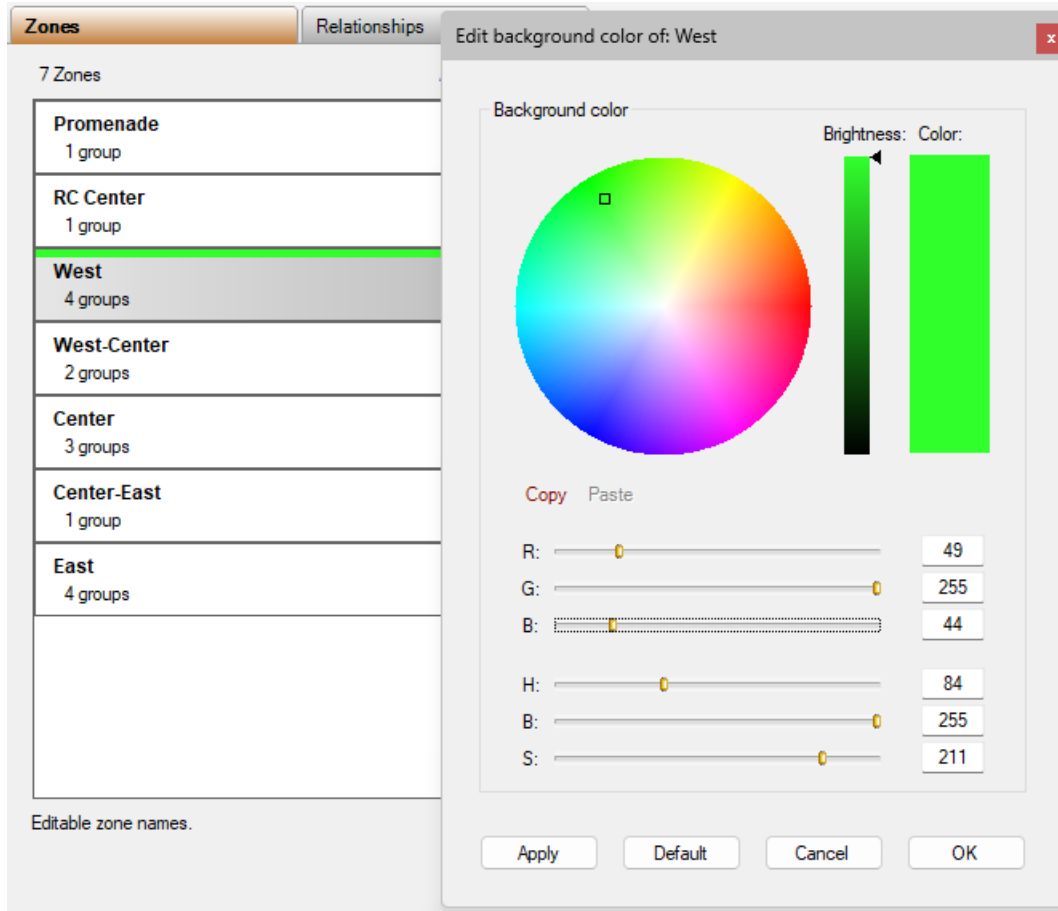
To illustrate how this works, there's nothing better than using real-world data. The Montreal Convention Centre has kindly agreed to share some of its data (group name in French, but easy to understand). Let's start with a simplified setup:

16 Groups
Zone 1
200 ouest
Promenade
RC centre
200 centre
200 est
510 ouest
511 ouest
512 ouest
513 - 515 ouest
516 ouest
517 centre
518 - 519 est
520 est
521 - 525 est
700 OUEST
700 EST

The 16 groups will be divided into 7 zones, with 5 zones representing the layout of the rooms from west to east, plus two general zones. This results in:

7 Zones	Add	16 Groups
<b>Promenade</b> 1 group	-	Promenade <b>Promenade</b>
<b>RC Center</b> 1 group	-	RC Center RC centre
<b>West</b> 4 groups	-	West 200 ouest 510 ouest 511 ouest 700 OUEST
<b>West-Center</b> 2 groups	-	West-Center 512 ouest 513 - 515 ouest
<b>Center</b> 3 groups	-	Center 200 centre 516 ouest 517 centre
<b>Center-East</b> 1 group	-	Center-East 518 - 519 est
<b>East</b> 4 groups	-	East 200 est 520 est 521 - 525 est 700 EST
		Zone options <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid #ccc; padding: 5px;">             TV Channels              Reject Freq on each side: <input type="text" value="0.500"/> MHz           </div> <div style="border: 1px solid #ccc; padding: 5px;">             Interferences              Reject Freq on each side: <input type="text" value="0.300"/> MHz           </div> </div>

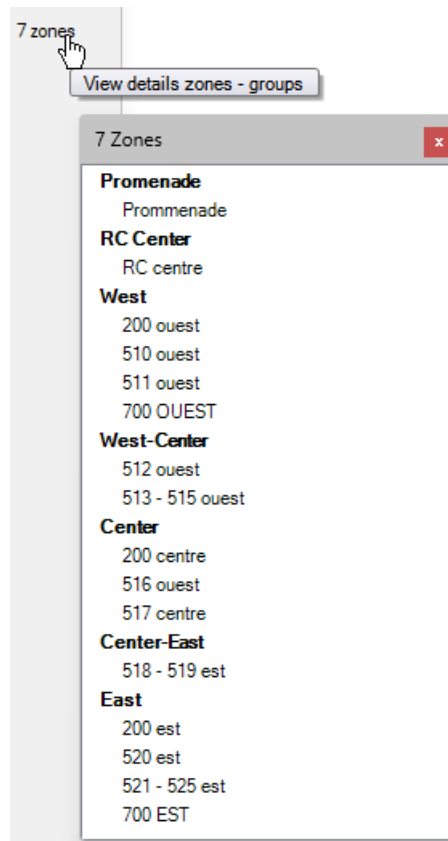
To add a color to the header of the zone, simply double-click at the top of the zone section:



The relationships between zones are defined in the “Relationships” view:

Definir la méthode d'évaluation d'une zone par rapport à une autre: 7 zones

Evaluation	Promenade	RC Center	West	West-Center	Center	Center-East	East
Promenade	Complete	Partial: 2 TX complete 3 TX 0 kHz	Partial: 2 TX 0 kHz 3 TX 0 kHz	Independent spacing 0 k	Partial: 2 TX 0 kHz 3 TX 0 kHz	Independent spacing 0 k	Independent spacing 0 k
RC Center	Partial: 2 TX complete 3 TX 0 kHz	Complete	Partial: 2 TX 0 kHz 3 TX 0 kHz	Independent spacing 0 k	Partial: 2 TX complete 3 TX 0 kHz	Partial: 2 TX complete 3 TX 0 kHz	Independent spacing 0 k
West	Partial: 2 TX 0 kHz 3 TX 0 kHz	Partial: 2 TX 0 kHz 3 TX 0 kHz	Complete	Partial: 2 TX complete 3 TX 0 kHz	Partial: 2 TX complete no 3 TX	Partial: No 2 TX no 3 TX	Independent spacing 0 k
West-Center	Independent spacing 0 k	Independent spacing 0 k	Partial: 2 TX complete 3 TX 0 kHz	Complete	Partial: 2 TX complete 3 TX 0 kHz	Partial: 2 TX 0 kHz 3 TX 0 kHz	Independent spacing 0 k
Center	Partial: 2 TX 0 kHz 3 TX 0 kHz	Partial: 2 TX complete 3 TX 0 kHz	Partial: 2 TX complete no 3 TX	Partial: 2 TX complete 3 TX 0 kHz	Complete	Partial: 2 TX complete 3 TX 0 kHz	Partial: No 2 TX no 3 TX
Center-East	Independent spacing 0 k	Partial: 2 TX complete 3 TX 0 kHz	Partial: No 2 TX no 3 TX	Partial: 2 TX 0 kHz 3 TX 0 kHz	Partial: 2 TX complete 3 TX 0 kHz	Complete	Partial: 2 TX complete 3 TX 0 kHz
East	Independent spacing 0 k	Independent spacing 0 k	Independent spacing 0 k	Independent spacing 0 k	Partial: No 2 TX no 3 TX	Partial: 2 TX complete 3 TX 0 kHz	Complete



### 4.3 Relationships between groups in zone

The operation of relationships is explained in more detail in Chapter 5.

Relationships between groups within a zone can be defined using the standard method (double-clicking on the group header):

Relationships between Groups in a Zone

**West**

Set a group to another evaluation method: 4 groups

Evaluation	200 ouest	510 ouest	511 ouest	700 OUEST
200 ouest	Complete	Partial: 2 TX 0 kHz 3 TX 0 kHz	Partial: 2 TX 0 kHz no 3 TX	Independent spacing 0 k
510 ouest	Partial: 2 TX 0 kHz 3 TX 0 kHz	Complete	Complete	Independent spacing 0 k
511 ouest	Partial: 2 TX 0 kHz no 3 TX	Complete	Complete	Independent spacing 0 k
700 OUEST	Independent spacing 0 k	Independent spacing 0 k	Independent spacing 0 k	Complete

Partial evaluation:  
2 TX complete, 2 TX 0 kHz, 3 TX 0 kHz, no 2 TX or no 3 TX.  
0 kHz = on carrier. Separation and Image Freq always calculated.

OK  
Cancel

Relationships between Groups in a Zone

**East**

Set a group to another evaluation method: 4 groups

Evaluation	200 est	520 est	521 - 525 est	700 EST
200 est	Complete	Independent spacing 0 k	Independent spacing 0 k	Independent spacing 0 k
520 est	Independent spacing 0 k	Complete	Partial: 2 TX 0 kHz 3 TX 0 kHz	Partial: No 2 TX no 3 TX
521 - 525 est	Independent spacing 0 k	Partial: 2 TX 0 kHz 3 TX 0 kHz	Complete	Partial: 2 TX 0 kHz 3 TX 0 kHz
700 EST	Independent spacing 0 k	Partial: No 2 TX no 3 TX	Partial: 2 TX 0 kHz 3 TX 0 kHz	Complete

Partial evaluation:  
2 TX complete, 2 TX or 3 TX 0 kHz, no 2 TX or 3 TX  
0 kHz = on carrier. Separation and Image Freq always calculated.

OK  
Cancel

Each zone has its own definition of the relationships between groups. Note that for groups outside a zone, the relationships are defined by the zones; they cannot be changed individually as in versions prior to 4.80.

Thus, the relationship between Group 520 (East) and Group 510 (West) - that is, the East Zone and the West Zone - is set to "Independent" for all groups in both zones.

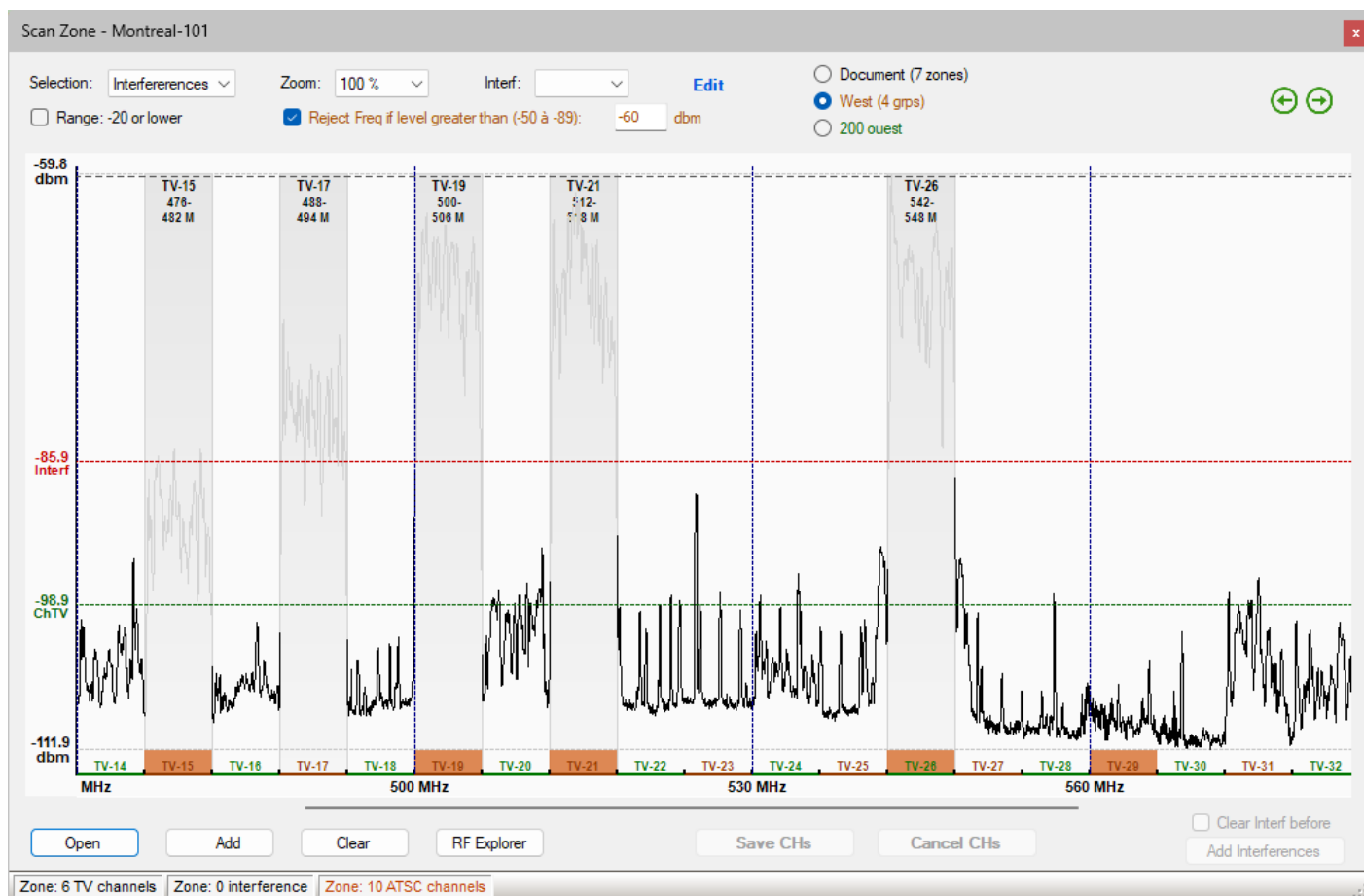
### 4.4 Zones Scans

The operation of scans is explained in greater detail in Chapter 21.

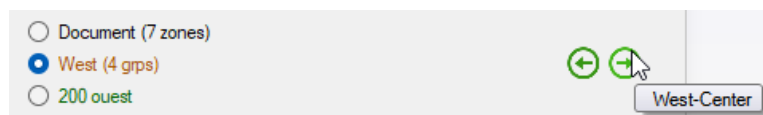
Scans can now be managed from the global and detailed views using the zone control panel:



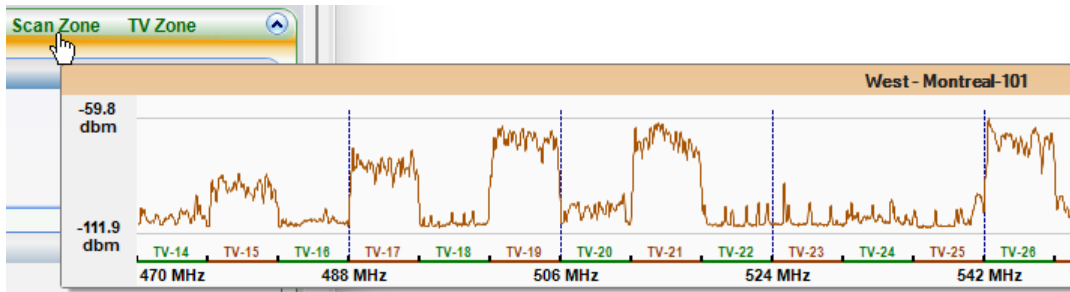
The "Scan" command calls the module:



The module allows you to manage scans for the document, zones, and groups using the selector:



The "Scan" indicator for groups displays the source of the scan:



### 4.5 Zones Interferences

The operation of scans is explained in greater detail in Chapter 21.

The “Interf” command in the zone control panel calls up the new interference management module:

Interferences ✖

Open   Add   Clear   Save    Document (7 zones)    West (4 gps)    200 ouest   ↩   ↪

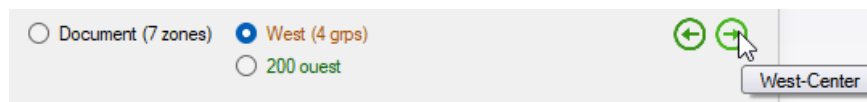
File:

No	Start Frequency	Stop Frequency	Comment
1	474.925	474.925	
2	475.000	475.000	
3	475.050	475.050	
4	510.000	510.000	
5	511.300	511.300	
6	511.350	511.350	
7	524.925	524.925	
8	525.000	525.000	
9	534.075	534.075	
10	534.125	534.125	
11	541.350	541.350	
12	541.500	541.500	
13	548.500	548.500	
14	548.650	548.650	
15	574.925	574.925	
16	574.975	574.975	
17	575.050	575.050	
18	589.825	589.825	
19			

OK   Cancel

18 interf. ⋮

The module allows you to manage interferences for documents, zones, and groups using the selector:



You can also navigate from one zone to another using the Previous and Next arrows, as well as by groups.

The interference list is automatically sorted in ascending order by value.

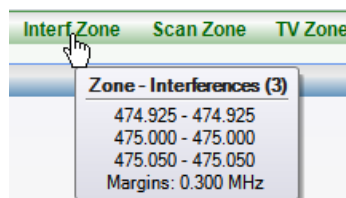
The last blank line is used to add an interference.

The list can be saved. You can load a list or clear it.

The "Intermodulations" view also allows you to edit interferences:

Interferences - Document		Interferences - Zone (18)		Interferences - Group	
No	Start Frequency	Stop Frequency			
1	474.925	474.925			
2	475.000	475.000			
3	475.050	475.050			

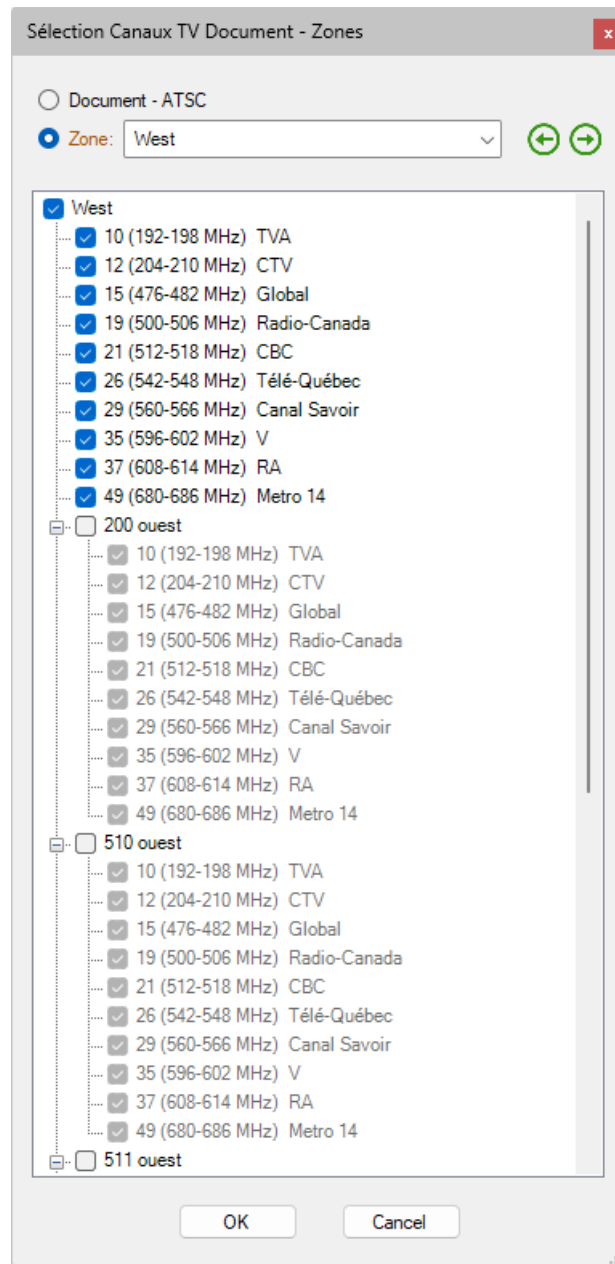
The "Interf" indicator for groups displays the source of the interference:



## 4.6 Zones TV channels

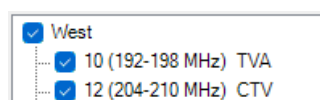
The operation of TV channels is explained in more detail in Chapter 6.

The "TV" command on the zone control panel calls up the new TV channel management module:

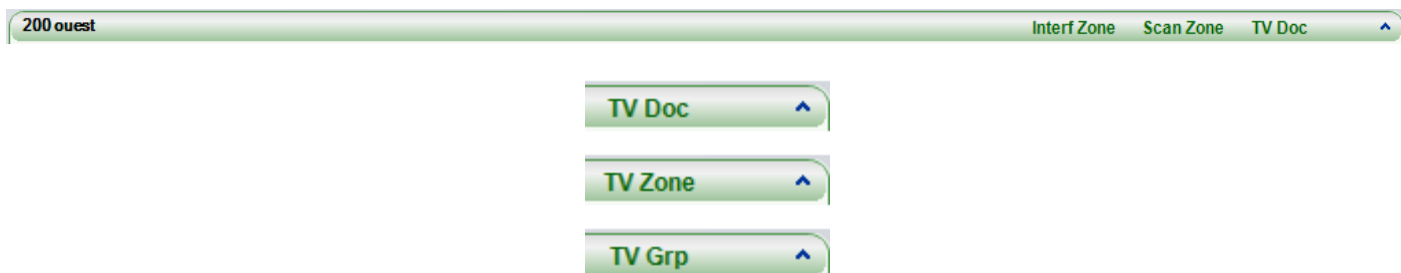


TV channels for zones and groups are now managed using the global and detailed views. The TV channel manager only manages the TV channels in the document.

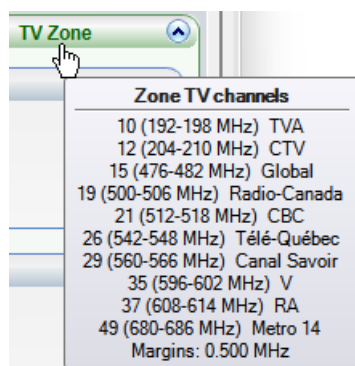
An important change: by default, the TV channels for groups follow those of the zones; the zone selector allows you to enable or disable the use of the document's channels:



To better illustrate the Document/Zone/Group assignment, the group header now displays the source of the parameters for TV channels, interference, and scans:



In addition, group indicators can now launch editing modules with a single click:



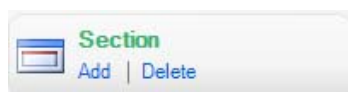


## 5 - Groups

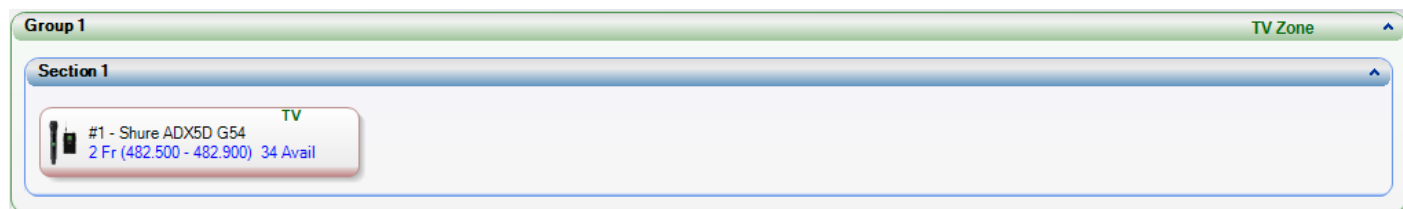
To manage groups in the global and detailed views, use the following commands:



Within a group, you can only add sections:

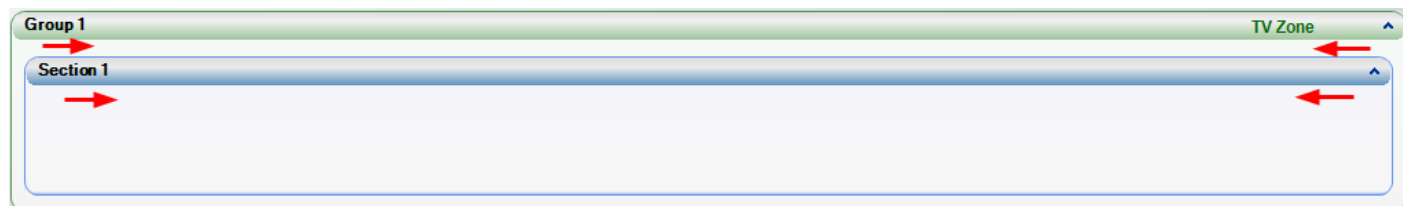


And sections are used to add devices:

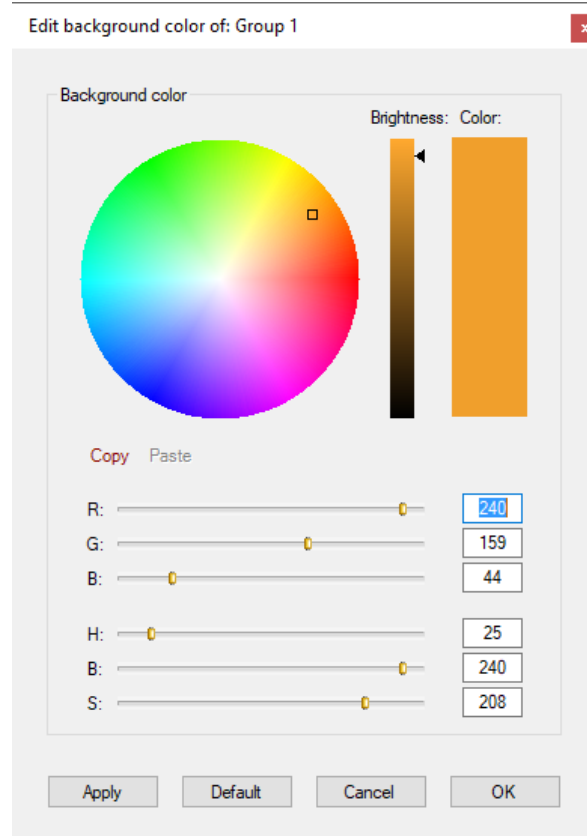


### 5.1 Group and Section background color

You can change the background color of a group or section in most panes. Simply double-click at the top of the group (below the title bar) or at the top of a section (below the title bar):



The color editor:



The "Apply" command allows the same color to be applied to a selection of devices (the selection of devices can be done on several sections of the same group). When the device selection is multiple, the displayed color is the color of the device that was double-clicked.

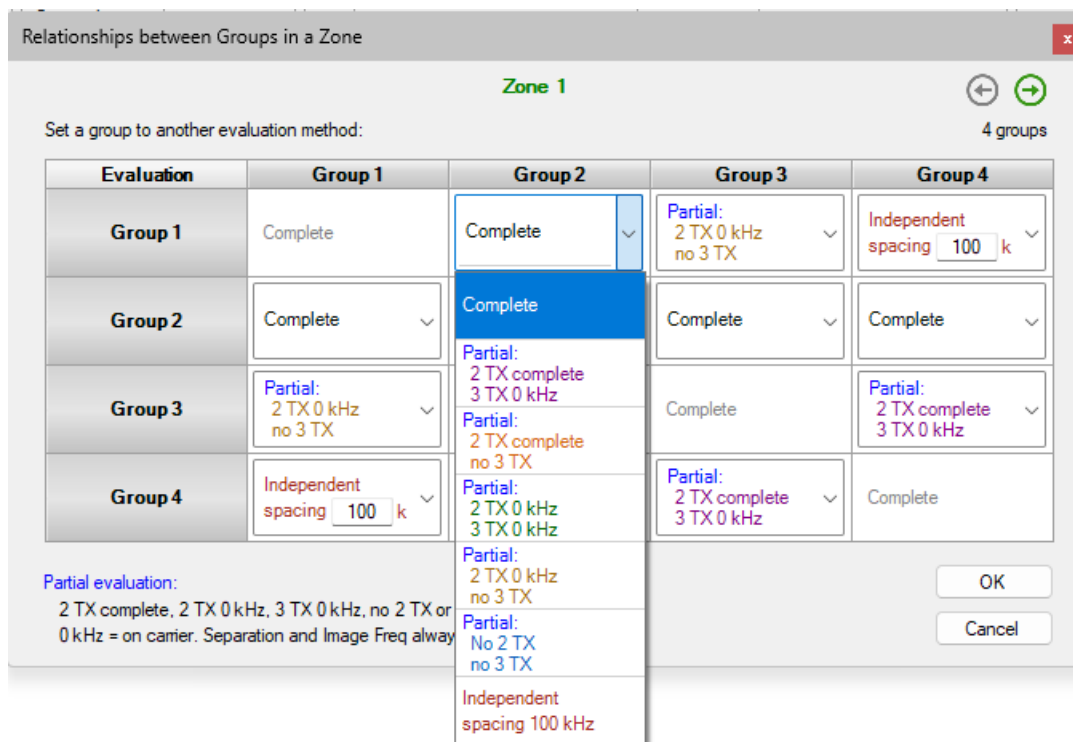
The "Default" button recalls the basic color used by EazyRF.

"Cancel" restores the color(s) used when calling the editor.

The "Copy/Paste" commands allow you to copy a color and apply it elsewhere.

## 5.2 Relationships between groups in zone

You can define relationships between groups just as you do with zones. This allows you to specify how evaluations between these groups should be performed. To open the editor, use the Group/Interrelations command or double-click on a group header:



Relationships between groups can be Full, Partial, or Independent. Partial relationships can be defined using all possible combinations of 2-TX and 3-TX intermodulation. There are no restrictions on possible combinations since version 4.70 of EazyRF.

To change a group's relationship in a horizontal row, simply click on the group name cell in the left pane. The change cycles through the options (Complete/Partial/Independent).

To change a group's relationship in a vertical column, simply click on the group name header in the top pane. The change also cycles through the options.

To set the relationship for all groups to "Complete" or "Partial," click the "Evaluation" header in the upper-left corner.

It is best to define relationships when creating a new document. You can change these relationships later, but intermodulation may occur.

Starting with version 4.76, you can adjust the spacing between independent groups completely freely. The default value is the one defined for the document:

Relationships between Groups in a Zone

**Zone 1**

Set a group to another evaluation method: 4 groups

Evaluation	Group 1	Group 2	Group 3	Group 4
Group 1	Complete	Independent spacing <input type="text" value="100"/> k	Independent spacing <input type="text" value="150"/> k	Independent spacing <input type="text" value="200"/> k
Group 2	Independent spacing <input type="text" value="100"/> k	Complete	Independent spacing <input type="text" value="150"/> k	Independent spacing <input type="text" value="50"/> k
Group 3	Independent spacing <input type="text" value="150"/> k	Independent spacing <input type="text" value="150"/> k	Complete	Independent spacing <input type="text" value="100"/> k
Group 4	Independent spacing <input type="text" value="200"/> k	Independent spacing <input type="text" value="50"/> k	Independent spacing <input type="text" value="100"/> k	Complete

Partial evaluation:  
 2 TX complete, 2 TX 0 kHz, 3 TX 0 kHz, no 2 TX or no 3 TX.  
 0 kHz = on carrier. Separation and Image Freq always calculated.

### 5.3 Groups Scans

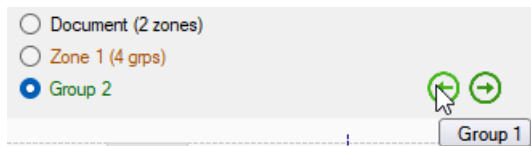
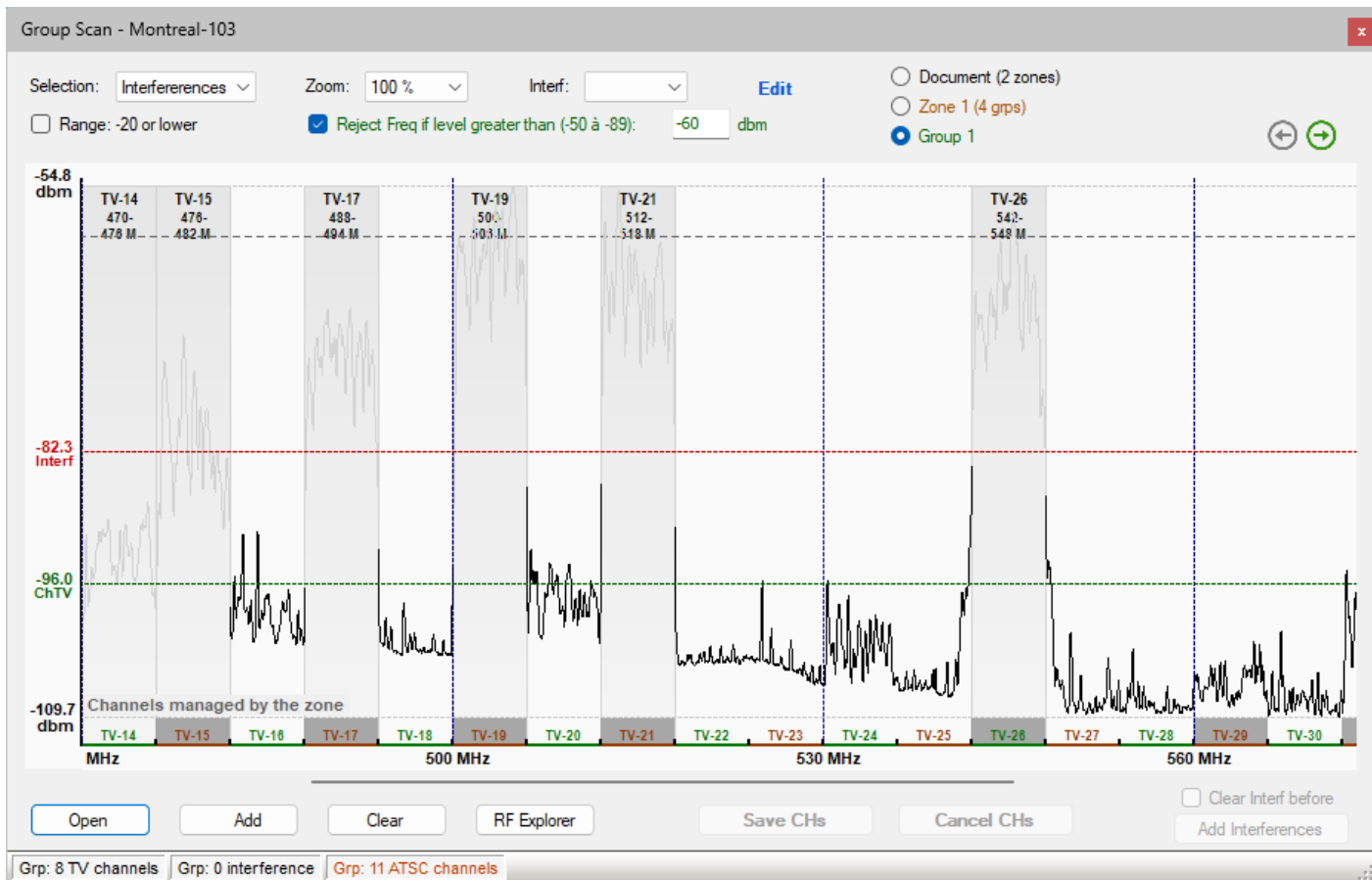
The operation of scans is explained in more detail in Chapter 21.

To add a scan file to a group, you can do so in the “Intermodulations” view by:

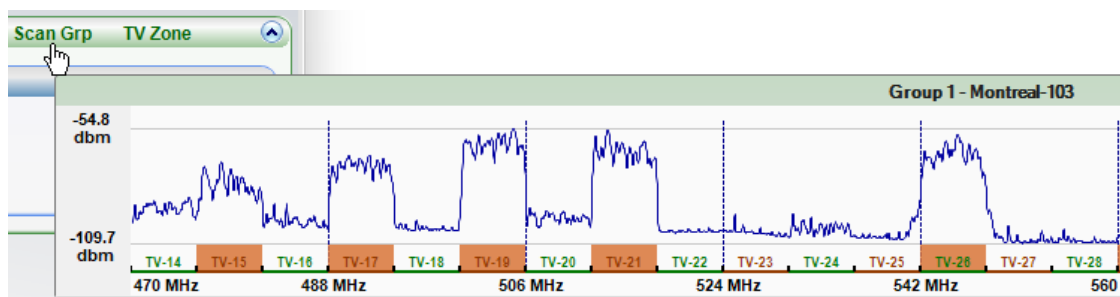
And assign it to a group or use the “Scan” command in the zone manager:

1 Zone:

And assign the file to the group:



After a scan is assigned to a group, the scan editor can be opened directly by clicking the “Scan” button on the group header:



### 5.4 Groups interferences

The way intermodulation works is explained in more detail in Chapter 21.

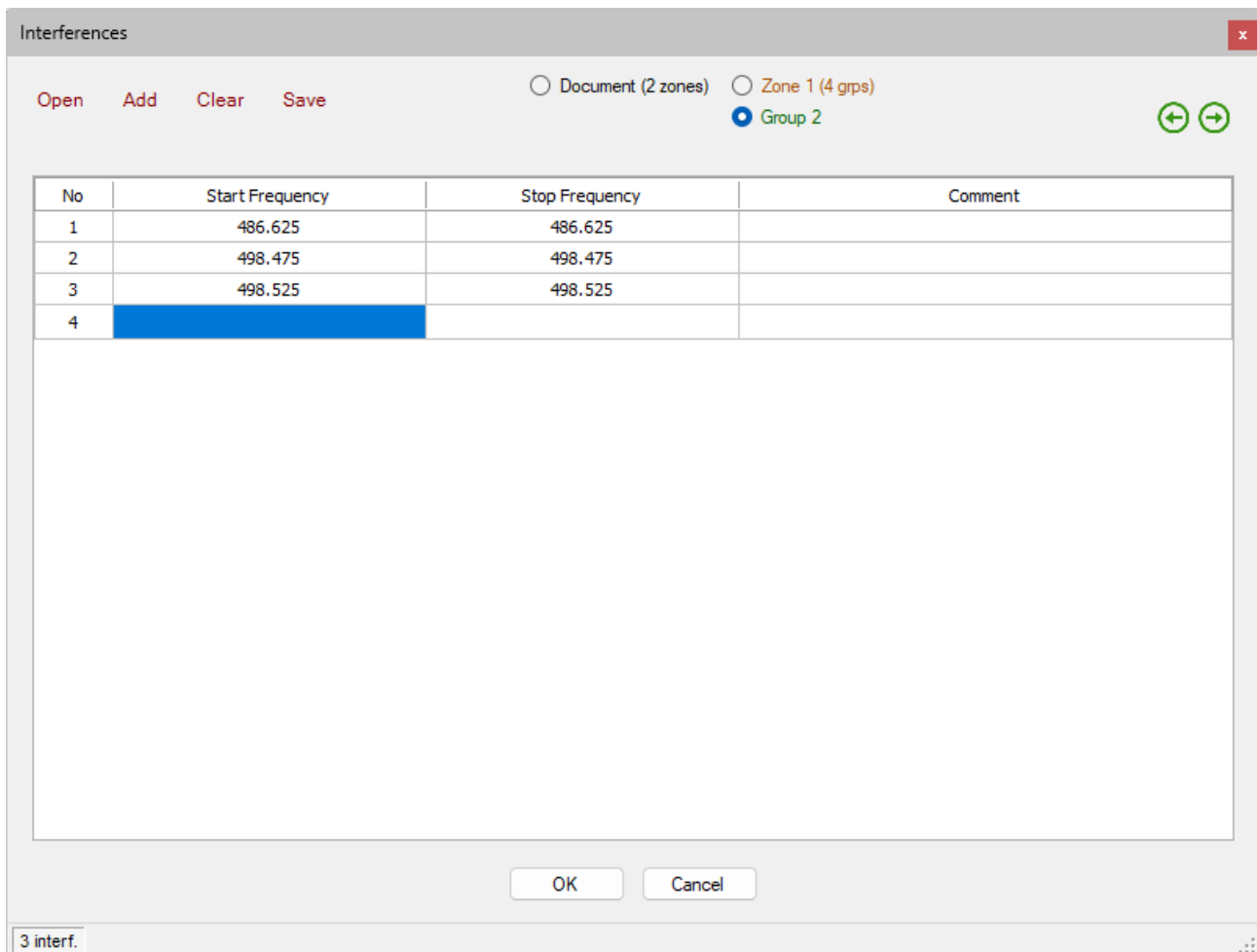
To add interferences to a group, you can do so in the “Intermodulations” view with:

Interferences - Document		Interferences - Zone		Interferences - Group (3)	
No	Start Frequency	Stop Frequency			
1	486.625	486.625			
2	498.475	498.475			
3	498.525	498.525			

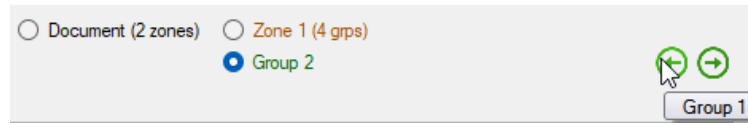
You can also use the “Interf” command in the zone manager:



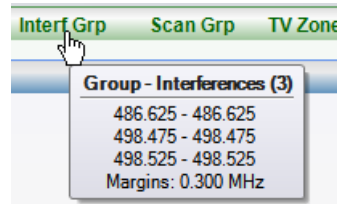
And select the group:



You can move from one group to another:



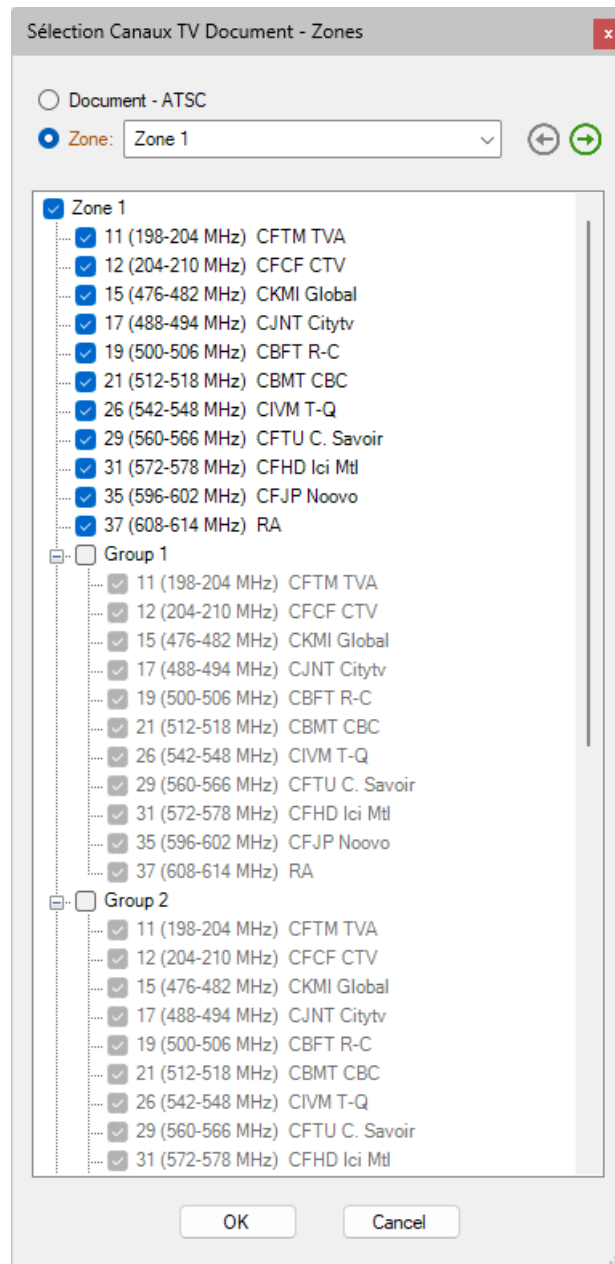
The "Interf" indicator for groups displays the source of the interference:



## 5.5 Groups TV Channels

The operation of TV channels is explained in more detail in Chapter 6.

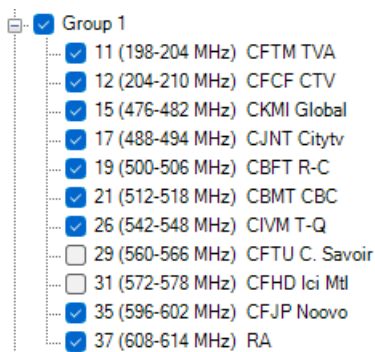
The "TV" command on the zone control panel calls up the new TV channel management module:



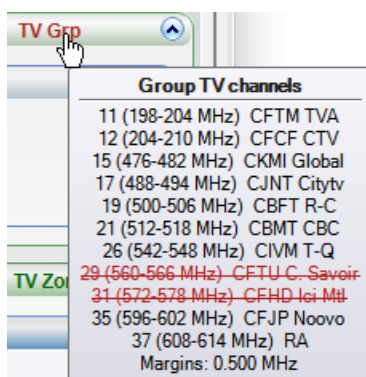
By default, the TV channels for each zone are assigned to the groups within that zone, as shown in the group headers:

TV Zone

Simply toggle the switch for each group to enable editing:



The group's TV indicator displays the selection mode:

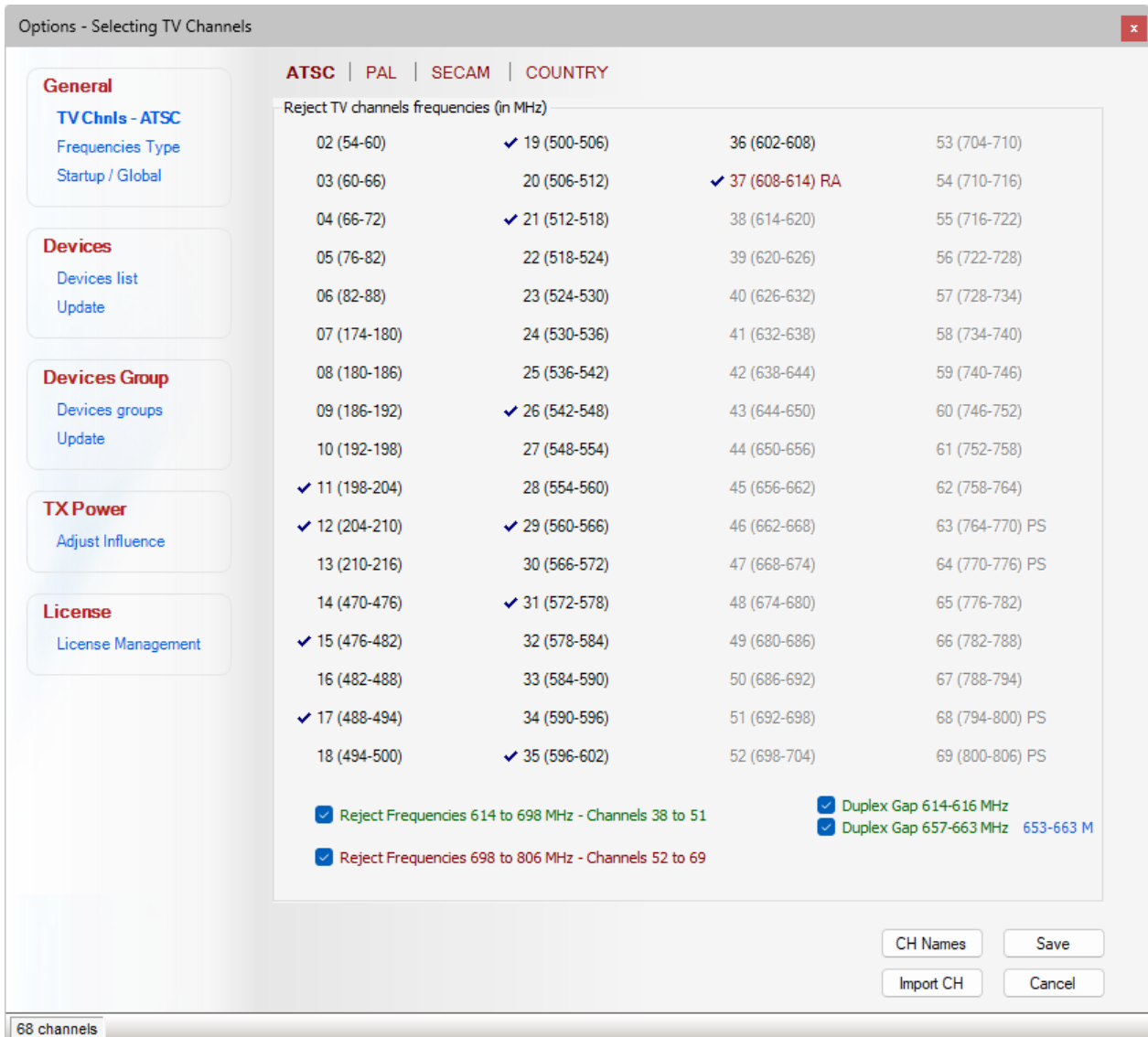


The group's TV indicator can open the editor directly with a single click.



## 6 - TV channels and DAB

The “Options” menu allows you to set the default TV channels used when creating a document:



EazyRF supports three main video standards of television: ATSC, PAL and SECAM.

To change standard, select one of the options:

**ATSC | PAL | SECAM | COUNTRY**

ATSC	PAL	SECAM	COUNTRY
Reject TV channels frequencies (in MHz)			
02 (54-60)	✓ 19 (500-506)	36 (602-608)	53 (704-710)
03 (60-66)	20 (506-512)	✓ 37 (608-614) RA	54 (710-716)
04 (66-72)	✓ 21 (512-518)	38 (614-620)	55 (716-722)
05 (76-82)	22 (518-524)	39 (620-626)	56 (722-728)
06 (82-88)	23 (524-530)	40 (626-632)	57 (728-734)
07 (174-180)	24 (530-536)	41 (632-638)	58 (734-740)
08 (180-186)	25 (536-542)	42 (638-644)	59 (740-746)
09 (186-192)	✓ 26 (542-548)	43 (644-650)	60 (746-752)
10 (192-198)	27 (548-554)	44 (650-656)	61 (752-758)
✓ 11 (198-204)	28 (554-560)	45 (656-662)	62 (758-764)
✓ 12 (204-210)	✓ 29 (560-566)	46 (662-668)	63 (764-770) PS
13 (210-216)	30 (566-572)	47 (668-674)	64 (770-776) PS
14 (470-476)	✓ 31 (572-578)	48 (674-680)	65 (776-782)
✓ 15 (476-482)	32 (578-584)	49 (680-686)	66 (782-788)
16 (482-488)	33 (584-590)	50 (686-692)	67 (788-794)
✓ 17 (488-494)	34 (590-596)	51 (692-698)	68 (794-800) PS
18 (494-500)	✓ 35 (596-602)	52 (698-704)	69 (800-806) PS
<input checked="" type="checkbox"/> Reject Frequencies 614 to 698 MHz - Channels 38 to 51		<input checked="" type="checkbox"/> Duplex Gap 614-616 MHz	
<input checked="" type="checkbox"/> Reject Frequencies 698 to 806 MHz - Channels 52 to 69		<input checked="" type="checkbox"/> Duplex Gap 657-663 MHz 653-663 M	

ATSC	PAL	SECAM	COUNTRY
Reject TV channels frequencies (in MHz)			
02 (47-54)	19	36 (590-598)	53 (726-734)
03 (54-61)	20	37 (598-606)	54 (734-742)
04 (61-68)	21 (470-478)	38 (606-614)	55 (742-750)
05 (174-181)	22 (478-486)	39 (614-622)	56 (750-758)
06 (181-188)	23 (486-494)	✓ 40 (622-630)	57 (758-766)
07 (188-195)	24 (494-502)	41 (630-638)	58 (766-774)
08 (195-202)	✓ 25 (502-510)	42 (638-646)	59 (774-782)
09 (202-209)	26 (510-518)	43 (646-654)	60 (782-790)
✓ 10 (209-216)	27 (518-526)	44 (654-662)	61 (790-798)
11 (216-223)	28 (526-534)	45 (662-670)	
12 (223-230)	29 (534-542)	46 (670-678)	
13	✓ 30 (542-550)	47 (678-686)	
14	31 (550-558)	48 (686-694)	
15	32 (558-566)	49 (694-702)	
16	33 (566-574)	50 (702-710)	
17	34 (574-582)	51 (710-718)	
18	✓ 35 (582-590)	52 (718-726)	
<input checked="" type="checkbox"/> Reject Frequencies 695 to 865 MHz - Channels 49 to 61			
<input type="checkbox"/> 695-703 MHz Guard band			
<input checked="" type="checkbox"/> 821-832 Duplex Gap			
<input type="checkbox"/> 863-865 MHz ISM			

ATSC | PAL | **SECAM** | COUNTRY

Reject TV channels frequencies (in MHz)

02	19	36 (590-598)	53 (726-734)
03	20	37 (598-606)	54 (734-742)
04	✓ 21 (470-478)	38 (606-614)	55 (742-750)
05	22 (478-486)	39 (614-622)	56 (750-758)
06	✓ 23 (486-494)	40 (622-630)	57 (758-766)
07	✓ 24 (494-502)	41 (630-638)	58 (766-774)
08	25 (502-510)	42 (638-646)	59 (774-782)
09	26 (510-518)	✓ 43 (646-654)	60 (782-790)
10	27 (518-526)	44 (654-662)	61 (790-798)
11	28 (526-534)	45 (662-670)	62 (798-806)
12	✓ 29 (534-542)	46 (670-678)	63 (806-814)
13	30 (542-550)	47 (678-686)	64 (814-822)
14	✓ 31 (550-558)	48 (686-694)	65 (822-830)
15	32 (558-566)	49 (694-702)	66 (830-838)
16	33 (566-574)	50 (702-710)	67 (838-846)
17	✓ 34 (574-582)	51 (710-718)	68 (846-854)
18	35 (582-590)	52 (718-726)	69 (854-862)

Available bands (Channels 49 to 69 blocked - 694 to 863 MHz)

694 - 698 MHz     736 - 753 MHz  
 Duplex Gap:     822 - 830 MHz     821.5 - 832 MHz

ATSC | PAL | SECAM | **COUNTRY**

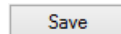
Reject TV channels frequencies (in MHz)

Country:

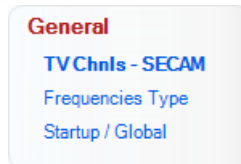
6 (174-181)	28 (526-533)	36 (582-589)	44 (638-645)
7 (181-188)	29 (533-540)	37 (589-596)	45 (645-652)
8 (188-195)	30 (540-547)	38 (596-603)	46 (652-659)
9 (195-202)	31 (547-554)	39 (603-610)	47 (659-666)
9A (202-209)	✓ 32 (554-561)	40 (610-617)	48 (666-673)
10 (209-216)	33 (561-568)	41 (617-624)	49 (673-680)
11 (216-223)	34 (568-575)	✓ 42 (624-631)	50 (680-687)
12 (223-230)	35 (575-582)	43 (631-638)	51 (687-694)

Reject Frequencies 470 to 526 MHz - Channels 20 to 27  
 Reject Frequencies 694 to 820 MHz - Channels 52 to 69

To save the system data and enable it as default values, select:



The video standard used now appears in the list of options:



Only changes to the standard that is saved are kept.

These basic channels appear in blue in the list of local channels (Chapter 2).

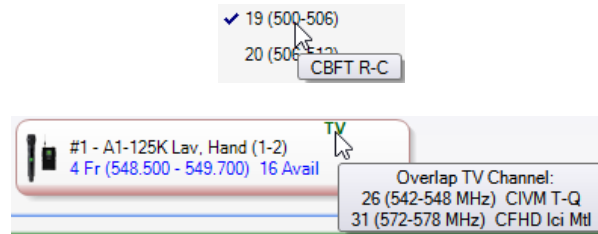
## 6.1 Channels name

The "CH Names" window allows you to define the name of each channel:

Channel	Selection	Description
10 (192-198)		
11 (198-204)	✓	CFTM TVA
12 (204-210)	✓	CFCF CTV
13 (210-216)		
14 (470-476)		
15 (476-482)	✓	CKMI Global
16 (482-488)		
17 (488-494)	✓	CJNT Citytv
18 (494-500)		
19 (500-506)	✓	CBFT R-C
20 (506-512)		
21 (512-518)	✓	CBMT CBC
22 (518-524)		
23 (524-530)		
24 (530-536)		
25 (536-542)		
26 (542-548)	✓	CIVM T-Q
27 (548-554)		
28 (554-560)		
29 (560-566)	✓	CFTU C. Savoir
30 (566-572)		
31 (572-578)	✓	CFHD Ici Mtl
32 (578-584)		

It is thus allowed to assign a name to a channel (and enable or disable).

This information is displayed when moving the mouse pointer:



## 6.2 Channels Import

You can import TV channels from public databases for a specific location with the command "Import CH":



Import ATSC Channels (database)

Enter either a postal code, a zip code, a city name, a full address or a latitude,longitude (45.40,-73.57)

Place:

Detail: Montreal, QC, Canada (45.509, -73.553)

Distance:   Km  Miles

Channel	Name	City	State/Province	Distance ▲	Power
<input checked="" type="checkbox"/> 19	CBFT R-C	Montréal	QC (CA)	3.01 km	448 Kw
<input checked="" type="checkbox"/> 21	CBMT CBC	Montréal	QC (CA)	3.01 km	436 Kw
<input checked="" type="checkbox"/> 26	CIVM T-Q	Montréal	QC (CA)	5.60 km	269 Kw
<input checked="" type="checkbox"/> 35	CFJP Noovo	Montréal	QC (CA)	3.01 km	17.7 Kw
<input checked="" type="checkbox"/> 11	CFTM TVA	Montréal	QC (CA)	3.01 km	11 Kw
<input checked="" type="checkbox"/> 12	CFCF CTV	Montréal	QC (CA)	3.01 km	10.6 Kw
<input checked="" type="checkbox"/> 15	CKMI Global	Montréal	QC (CA)	3.01 km	8 Kw
<input checked="" type="checkbox"/> 31	CFHD Ici Mtl	Montréal	QC (CA)	3.41 km	4.03 Kw
<input checked="" type="checkbox"/> 17	CJNT Citytv	Montréal	QC (CA)	2.98 km	2.07 Kw
<input type="checkbox"/> 29	CFTU C. Savoir	Montréal	QC (CA)	4.89 km	0.91 Kw

(9/10)

EazyRF is not responsible for the accuracy of public data.

Just type a location data as a postal code, a zip code, a city name, a full address, or GPS data, or latitude-longitude in the format: 54.75, -123.01 (degrees minutes must be in decimal).

The regions covered for ATSC are Canada, the US and the border area with Mexico. For SECAM, coverage includes France and its border regions.

The list displayed depends on the selected distance, between 50 and 200 km. The selected channels vary depending on the combination of distance and power. This suggestion is not foolproof, only the scanner can be reliable. Some channels are allocated but not used, attention to NEWDT or HDTV channels. Only digital channels are shown.

Distances can be displayed in kilometers or miles.

The choice of the desired measurement system and the default distance can be done in Options/General/Startup.

EazyRF 4.61 and more has a simplified version of the import of SECAM channels in order to better orient the choice of channels offered (the number of channels is much higher in France).

The simplified display is accessible via the “Simplified version” option:

Import SECAM Channels (database)

Enter either a postal code, a zip code, a city name, a full address or a latitude,longitude (45.40,-73.57)

Place:

Detail: Marseille, Bouches-du-Rhône, France (43.295, 5.37448)

Distance:   Km  Miles  Simplified version

Channel	Name	City	State/Province	Influence	Power
<input type="checkbox"/> 22	R2	Toulon	FR	Low	10 KW
<input type="checkbox"/> 22	R2	Saint-Raphaël	FR	Low	63 KW
<input checked="" type="checkbox"/> 23	R1	Marseille Grande Éto	FR	Very high	100 KW
<input type="checkbox"/> 23	R1	Marseille Pomègues	FR	Very high	3.5 KW
<input type="checkbox"/> 25	R4	Toulon	FR	Low	10 KW
<input type="checkbox"/> 25	R4	Saint-Raphaël	FR	Low	63 KW
<input checked="" type="checkbox"/> 26	R6	Marseille Grande Éto	FR	Very high	100 KW
<input type="checkbox"/> 26	R6	Marseille Pomègues	FR	Very high	3.5 KW
<input type="checkbox"/> 28	R3	Toulon	FR	Low	10 KW
<input type="checkbox"/> 28	R3	Saint-Raphaël	FR	Low	63 KW
<input checked="" type="checkbox"/> 29	R7	Marseille Grande Éto	FR	Very high	100 KW
<input type="checkbox"/> 29	R7	Toulon	FR	Low	10 KW
<input type="checkbox"/> 29	R7	Marseille Pomègues	FR	Very high	3.5 KW
<input checked="" type="checkbox"/> 30	R3	Marseille Grande Éto	FR	Very high	32 KW
<input type="checkbox"/> 30	R3	Marseille Pomègues	FR	Very high	3.5 KW

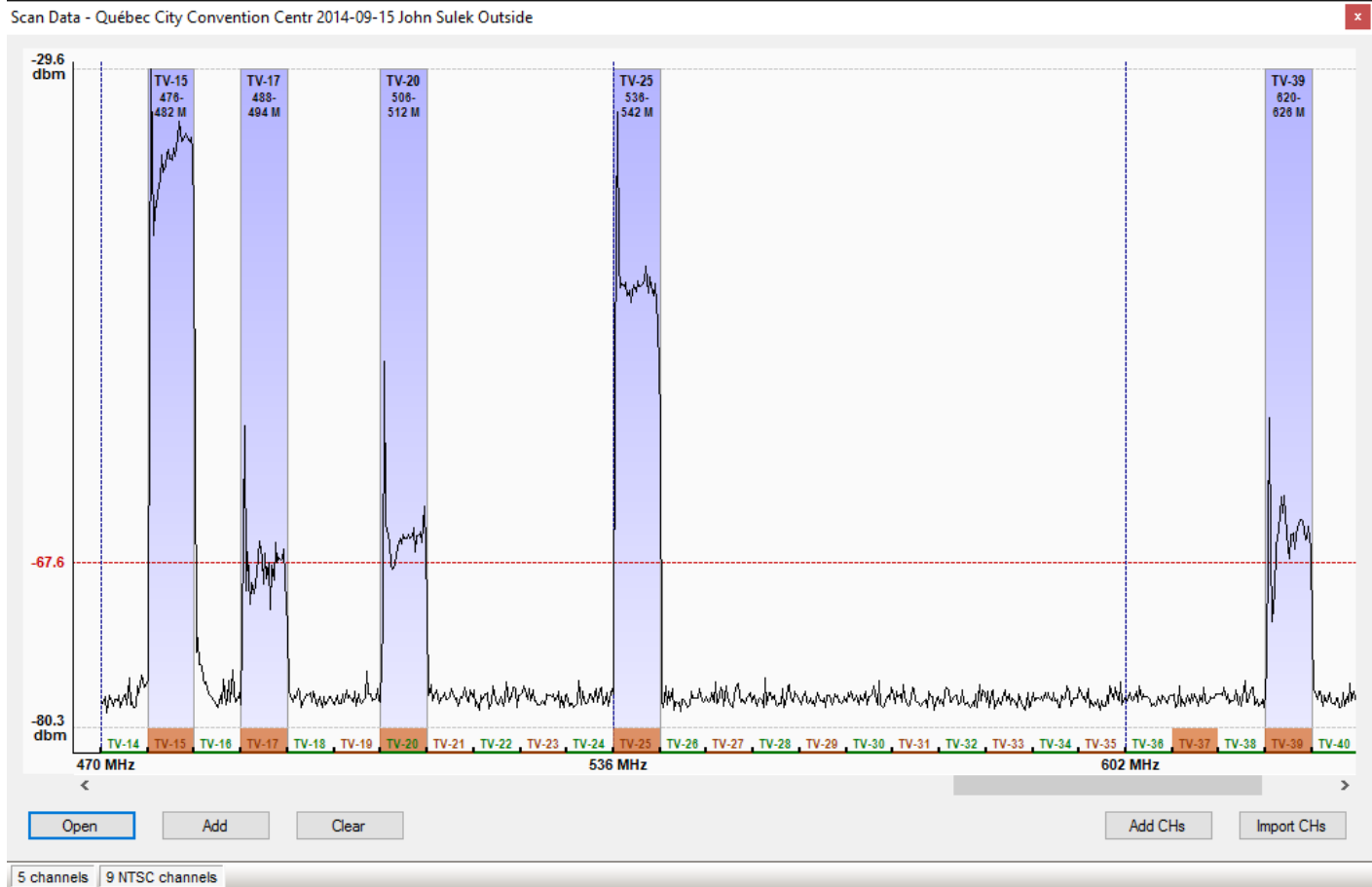
(6/35)

EazyRF is not responsible for the accuracy of public data.

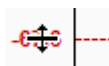
A combined rating of distance and power was estimated to create a new “Influence” data, with the results: Very High, High, Medium, or Low.

### 6.3 Import scans

The “Import Scan” command read a file created from a frequency scanner format – 35s, dat, csv, rfe, spa, trc and more):



The red line is the detection level for a TV channel (if the cumulative width exceeds 40%). This level can be changed by dragging the text value:



A channel can be activated / deactivated with a click of the mouse. The selected channels of the document appear in orange. Detected channels are independent of the channels in the document. Selection is not automatic because sampling does not necessarily cover the entire range.

The scans files are global, so they are shared with the Intermodulations - Scans module. The data is saved with the document, so if they are no longer useful, it would be better to delete them.

The selection can be imported to the active list (deleting old ones) or added to the list.

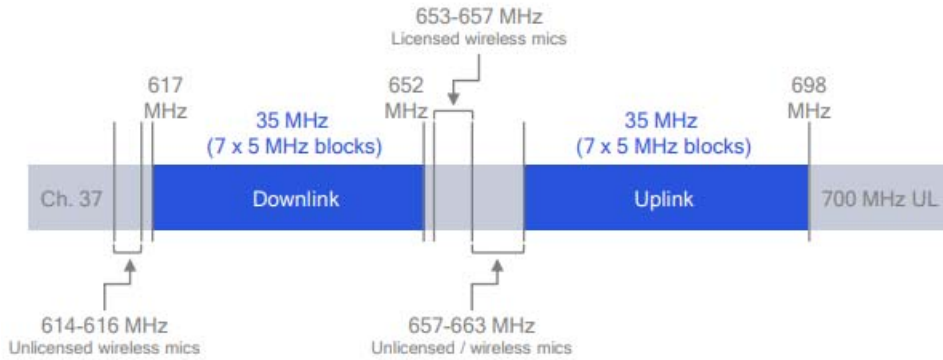
## 6.4 Rejection zone

An additional option allows you to enable or disable the blocking of the frequency band reserved for commercial use in certain countries since the transition to digital television and 4G and 5G cellular networks.

Each blocked zone has one or more exclusion zones, that is, areas where the use of these frequencies is permitted.

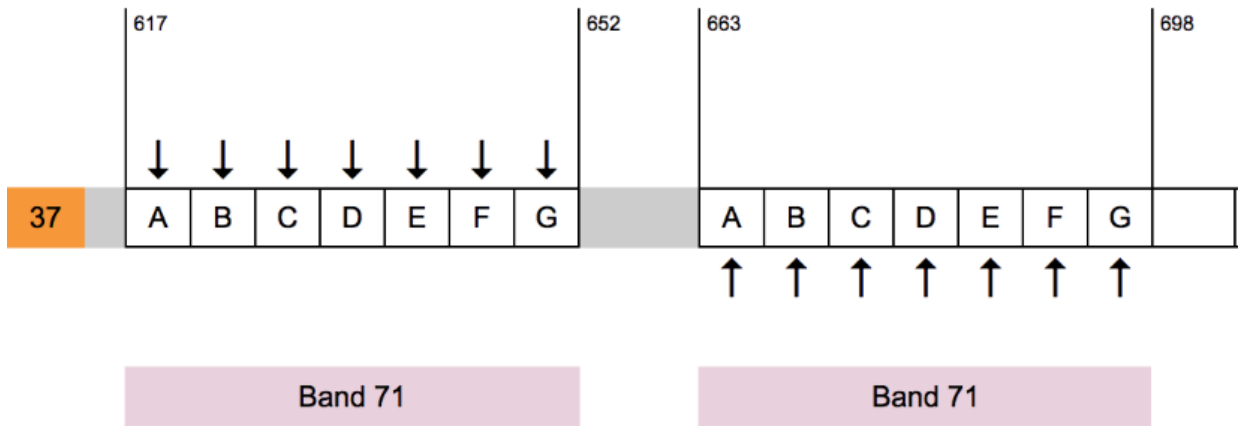
### 6.4.1 North America Frequency Rejection Zone

In North America, the 600 MHz frequency band has moved from the allocation of digital television channels (Ch 38 to 51) to those of 5G LTE cellular telephony. Here is the attribution:



### 600 MHz Spectrum

The “Downlink” and “Uplink” zones are called band 71 in the cellular world. These two areas are separated into 7 blocks of 5 MHz:



The FCC which manages the allocation of frequencies in the United States allows the use of the 5 MHz blocks in the 71 band (downlink and uplink are paired) when they are free in some regions.

Just click on “Edit” to call up the rejection zone editor:

Reject Frequencies  
 Reject Freq 614 to 698 MHz (Ch 38 to 51), Duplex Gap 614-616 MHz, Duplex  
 Gap 657-663 MHz.  
 Reject Freq 698 to 806 MHz (Ch 52 to 69) Edit

Definition Rejection of ATSC frequencies

Reject Frequencies 614 to 698 MHz standard
  Reject Frequencies 614 to 698 MHz custom

Standard

- 614 to 698 MHz - Channels 38 to 51
- Duplex Gap 614-616 MHz
- Duplex Gap 653-663 MHz
- Duplex Gap 657-663 MHz
- No Duplex Gap 650 MHz

Reject Frequencies 698 to 806 MHz - Channels 52 to 69

Band 941-960 MHz

Reject frequencies

USA: 952.000 to 952.850 MHz and 956.250 to 956.450 MHz
  CAN: 952.000 to 953.000 MHz and 956.250 to 956.450 MHz

Custom

- Guard band 616-617 MHz
- Band 71 A - 617-622 MHz Downlink, 663-668 MHz Uplink
- Band 71 B - 622-627 MHz Downlink, 668-673 MHz Uplink
- Band 71 C - 627-632 MHz Downlink, 673-678 MHz Uplink
- Band 71 D - 632-637 MHz Downlink, 678-683 MHz Uplink
- Band 71 E - 637-642 MHz Downlink, 683-688 MHz Uplink
- Band 71 F - 642-647 MHz Downlink, 688-693 MHz Uplink
- Band 71 G - 647-652 MHz Downlink, 693-698 MHz Uplink
- Guard band 652-653 MHz

OK Cancel

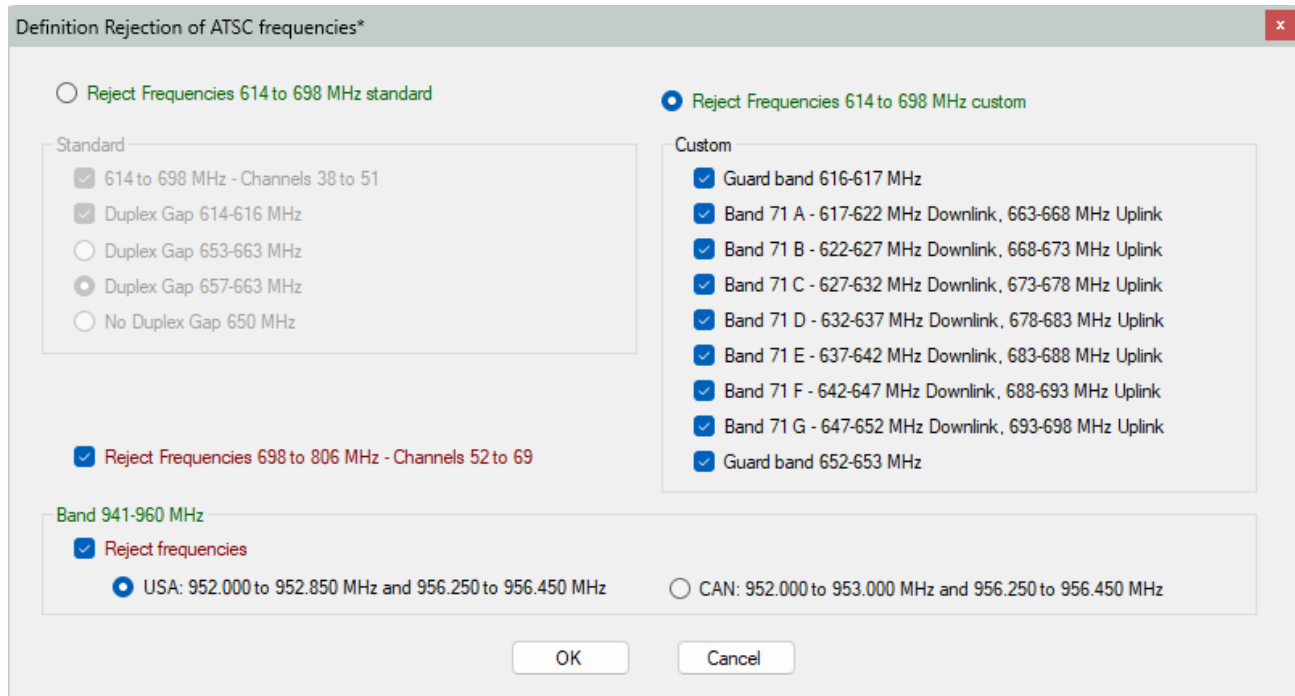
The editor is separated into two parts, the left part allows you to manage the 614 to 698 MHz band. The part on the right is used to manage the allocation of frequency blocks to be used according to the authorizations granted by the FCC.

The “Reject 614 to 698 MHz Frequencies standard” or “Reject 614 to 698 MHz Frequencies custom” selector is used to define the desired use.

Note that the 698 to 806 MHz rejection zone remains active in the two management modes of the 614 to 698 MHz zone.

The “Reject frequencies” selector of the 941-960 Mhz frequency band allows you to exclude frequencies that are not permitted in this region according to the American or Canadian format.

Let's take a closer look at the custom mode:



The downlink and uplink blocks work together, impossible to use them individually.

## 6.4.2 Frequency rejection zone in Europe

Europe does not yet use the 600 MHz zone. EazyRF uses this attribution:

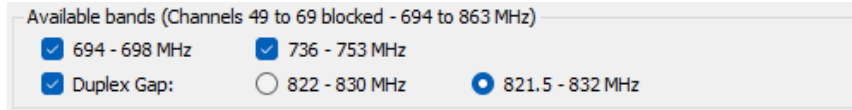


With the SECAM video standard, there is a recoverable frequency band within the frequency rejection band. The entire band extends from 694 MHz to 863 MHz. However, an 8 MHz band is recoverable starting at 822 MHz. This band is called the “Duplex Gap.”

In April 2025, ANFR published a new national frequency band allocation table for France.

Changes have been made to the UHF band 470–865 MHz:

Thus, the 694–698 MHz band becomes available, and the “Duplex Gap” shifts from 822–830 MHz to 821.5–832 MHz.



The 736–753 MHz band is the 5G LTE SDL band (733–758 MHz), located between the upload and download channels of the 700 MHz LTE band. This band is not currently available to everyone, but may become so in the future, according to some reports. For now, it is not accessible but has already been implemented in EazyRF.

The 863 to 865 MHz band has not been implemented due to its limited potential for use.

## 6.5 Modified video standard country

Some countries have adapted a video standard by changing the bandwidth of a channel from 8 MHz to 7 MHz for example and by changing the allocation of channel numbers.

The management of basic EazyRF video standards does not allow this type of change. So, a new method has been added to manage this situation, a COUNTRY section has been added to the TV channel management module:

TV channels of the document (regardless of global channels) \*

ATSC | PAL | SECAM | **COUNTRY**  Enable TV Channels Management on Groups

Reject TV channels frequencies (in MHz)

Country:

6 (174-181)	28 (526-533)	36 (582-589)	44 (638-645)
7 (181-188)	29 (533-540)	37 (589-596)	45 (645-652)
8 (188-195)	30 (540-547)	38 (596-603)	46 (652-659)
9 (195-202)	31 (547-554)	39 (603-610)	47 (659-666)
9A (202-209)	✓ 32 (554-561)	40 (610-617)	48 (666-673)
10 (209-216)	33 (561-568)	41 (617-624)	49 (673-680)
11 (216-223)	34 (568-575)	✓ 42 (624-631)	50 (680-687)
12 (223-230)	35 (575-582)	43 (631-638)	51 (687-694)

Reject Frequencies 470 to 526 MHz - Channels 20 to 27  
 Reject Frequencies 694 to 820 MHz - Channels 52 to 69

The channels in blue correspond to the global channels.

32 canaux PAL | 2 local channels

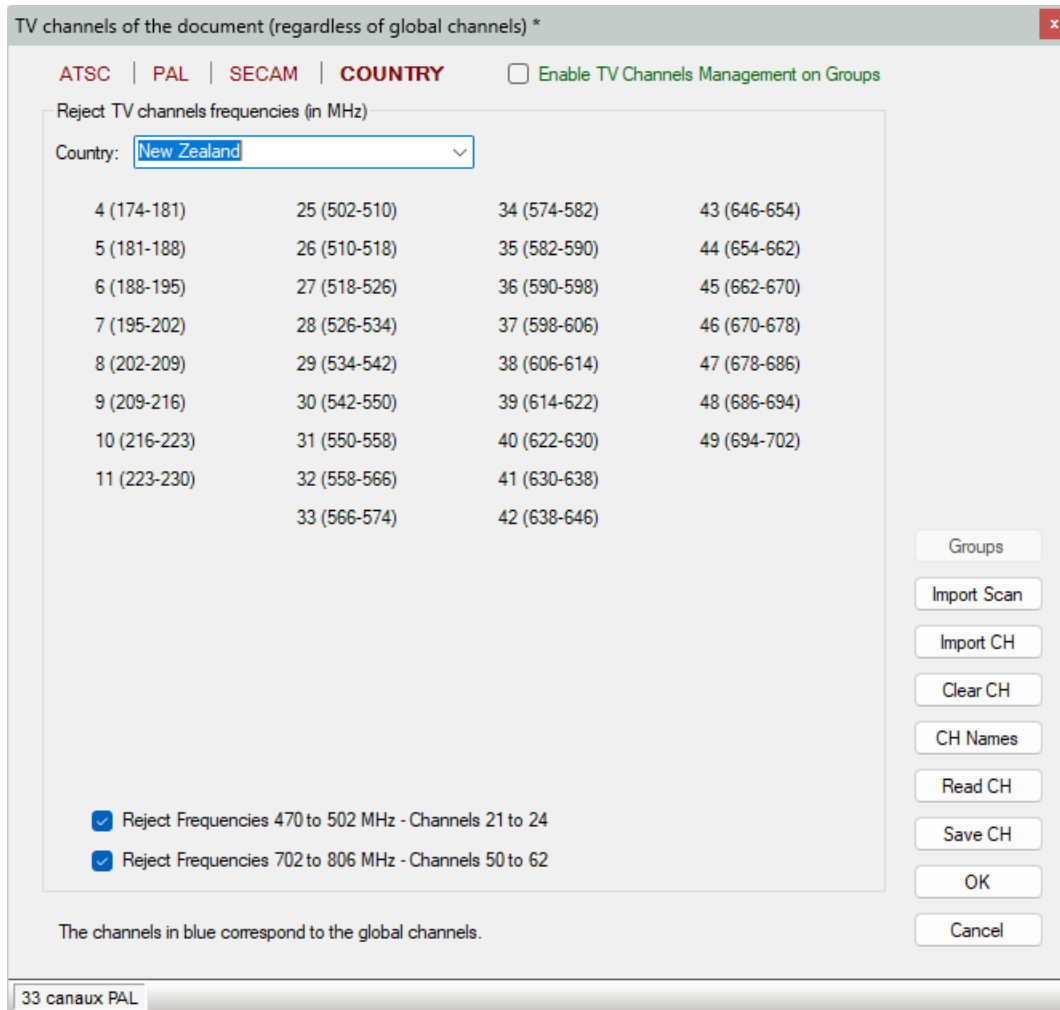
You can thus select the configuration of a country:

Country:

Australia  
New Zealand

For the moment the list of countries is limited to Australia and New Zealand. Other countries will be added as needed.

Which gives for New Zealand:



## 6.6 Digital Audio Broadcasting

EazyRF supports DAB (Digital Audio Broadcasting). For the moment only band III is covered, mainly used in Europe (178 MHz to 223 MHz).

In North America this frequency band is used by digital TV, so this control is not accessible with the ATSC video standard.

Here is an overview:

DAB (Digital Audio Broadcasting Band III)\*

5A 174.928 MHz	8A 195.936 MHz	11A 216.928 MHz
<input checked="" type="checkbox"/> 5B 176.640 MHz	8B 197.648 MHz	11N 217.088 MHz
5C 178.352 MHz	8C 199.360 MHz	11B 218.640 MHz
5D 180.064 MHz	<input checked="" type="checkbox"/> 8D 201.072 MHz	11C 220.352 MHz
		11D 222.064 MHz
6A 181.936 MHz	9A 202.928 MHz	<input checked="" type="checkbox"/> 12A 223.936 MHz
6B 183.648 MHz	<input checked="" type="checkbox"/> 9B 204.640 MHz	12N 224.096 MHz
<input checked="" type="checkbox"/> 6C 185.360 MHz	9C 206.352 MHz	12B 225.648 MHz
6D 187.072 MHz	9D 208.064 MHz	12C 227.360 MHz
		12D 229.072 MHz
7A 188.928 MHz	10A 209.936 MHz	13A 230.784 MHz
7B 190.640 MHz	10N 210.096 MHz	13B 232.496 MHz
7C 192.352 MHz	10B 211.648 MHz	13C 234.208 MHz
7D 194.064 MHz	10C 213.360 MHz	13D 235.776 MHz
	10D 215.072 MHz	13E 237.448 MHz
		13F 239.200 MHz

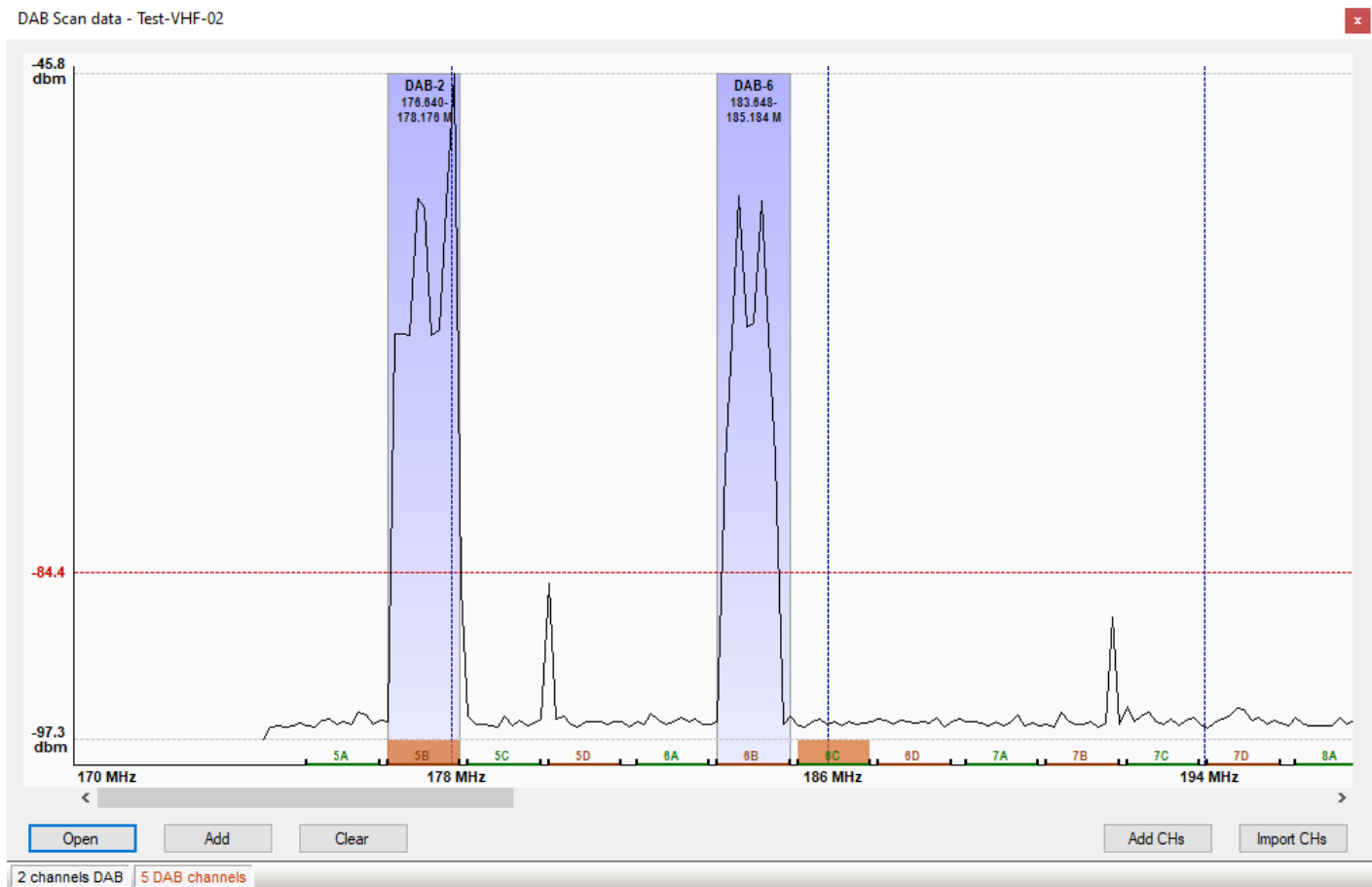
Reject Freq on each side:  MHz

41 DAB channels | 5 selected channels

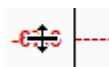
Buttons: Import Scan, Import CH, Clear CH, Read, Save, OK, Cancel

Like the TV channels editor, you can save a list for each city and use it later.

You can also select DAB channels from a scan file:



The red line is the detection level for a DAB channel (if the cumulative width exceeds 40%). This level can be changed by dragging the text value:



A channel can be activated / deactivated with a click of the mouse. The selected channels of the document appear in orange. Detected channels are independent of the channels in the document. Selection is not automatic because sampling does not necessarily cover the entire range.

The scans files are global, so they are shared with the Intermodulations - Scans module and TV Channels module. The data is saved with the document, so if they are no longer useful, it would be better to delete them.

You can also import DBA channels from public databases for a specific location with the command "Import CH":

Import DAB Channels France (database) ✕

Enter either a postal code, a city name, a full address or a latitude,longitude (45.40,7.57)

Place:  My position

Detail: Nice, Maritime Alps, France (43.700, 7.27774)

Distance:  ▾

Channel	Name	City	Frequency	Distance ▲	Power ▲	
<input checked="" type="checkbox"/>	11C	Beur FM	Nice	220.352 MHz	4.22 km	6 kW
<input checked="" type="checkbox"/>	11C	Sud Radio	Nice	220.352 MHz	4.22 km	6 kW
<input checked="" type="checkbox"/>	11C	Grimaldi FM	Nice	220.352 MHz	4.22 km	6 kW
<input checked="" type="checkbox"/>	11C	Radio Star	Nice	220.352 MHz	4.22 km	6 kW
<input checked="" type="checkbox"/>	11C	France Maghreb 2	Nice	220.352 MHz	4.22 km	6 kW
<input checked="" type="checkbox"/>	11C	Emotion FM	Nice	220.352 MHz	4.22 km	6 kW
<input checked="" type="checkbox"/>	11C	Crooner radio	Nice	220.352 MHz	4.22 km	6 kW
<input checked="" type="checkbox"/>	11C	Cannes Radio	Nice	220.352 MHz	4.22 km	6 kW
<input checked="" type="checkbox"/>	7B	Swigg	Nice	190.640 MHz	4.22 km	2 kW
<input checked="" type="checkbox"/>	7B	Radio Life	Nice	190.640 MHz	4.22 km	2 kW
<input checked="" type="checkbox"/>	7B	Ràdio Lengua d'Oc	Nice	190.640 MHz	4.22 km	2 kW
<input checked="" type="checkbox"/>	7B	Collector Radio	Nice	190.640 MHz	4.22 km	2 kW
<input checked="" type="checkbox"/>	7B	Génération	Nice	190.640 MHz	4.22 km	2 kW
<input checked="" type="checkbox"/>	7B	Latina FM	Nice	190.640 MHz	4.22 km	2 kW
<input checked="" type="checkbox"/>	9D	Nice radio	Nice	208.064 MHz	7.62 km	12 kW

(47) Import

EazyRF is not responsible for the accuracy of public data.

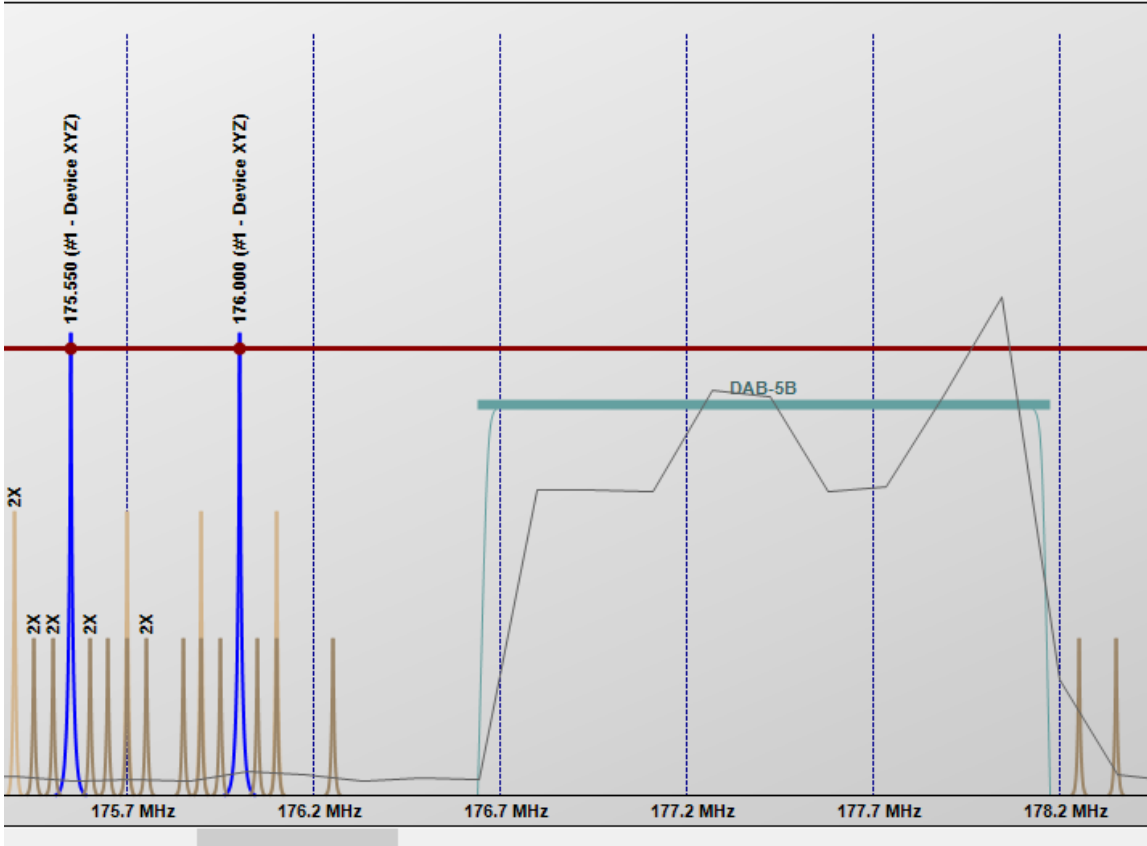
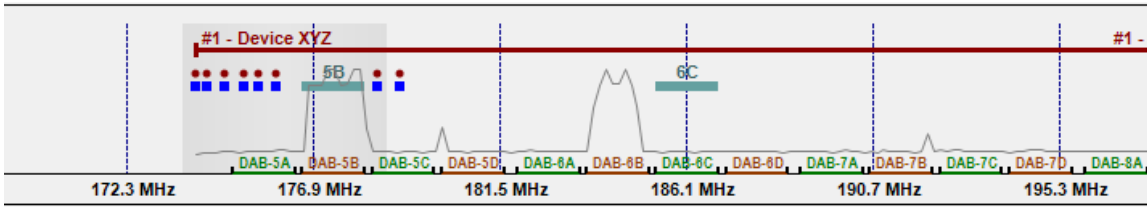
Cancel

Just type a location data as a postal code, a city name, a full address, or GPS data, or latitude-longitude in the format: 44.75, 7.01 (degrees minutes must be in decimal).

Coverage includes France only.

The list displayed depends on the selected distance, between 50 and 200 km. The selected channels vary depending on the combination of distance and power. This suggestion is not foolproof, only the scanner can be reliable. Some channels are allocated but not used.

Finally, the DAB channels are displayed in the same way as the TV channels in the frequency detail:



## 7 - Devices list

There are two types of EazyRF devices: Variable-Frequency devices and Fixed-Frequency devices.

A device is considered variable-frequency when the frequencies can be set between a Start value and a Stop value in predetermined increments. A device is of the fixed type when the frequencies are predetermined (a choice of X frequencies), often adjustable via a rotary selector.

The list of devices is contained in the file “Appareils.lst4” (Devices in French).

The screenshot shows a software window titled "List of Devices" with a search bar and two tabs: "Devices" and "Dev Groups". The "Devices" tab is active, displaying a list of microphone models with their corresponding frequency type indicators (Rj, TV, X, Ri). The "Shure AD4D G55" model is highlighted in blue. Below the list is a table showing the properties of the selected device.

Var Device	Shure AD4D G55
Based on	Basic model
Type	Micros
Nb Freq Simult	2
Tolerance 2 TX	100
Tolerance 3 TX	50
Separation	400
Start	470.125
Stop	636.000

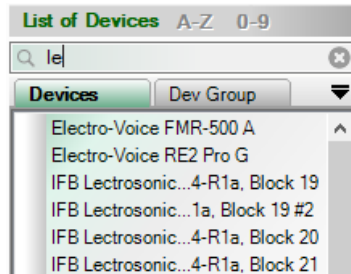
At the bottom of the window, it shows "1231 Devices" and "X1" with a dropdown arrow.

The list can be sorted alphabetically or by Ascending Frequencies with buttons A-Z or 0-9:



List of Devices A-Z 0-9

In addition, a filter can be applied on the list at the beginning or middle name:



EazyRF calculates the base frequencies (the number of desired frequencies) and the available frequencies for each device in the list simply by hovering the mouse pointer over a device's name:

TV	Shure AD4D G55	
TV	Shure AD4G56	
TV	Shure AD4	<b>Shure AD4D G55</b>
TV	Shure AD4	2 Basic Freq:
TV	Shure AD4	470.125
TV	Shure AD4	470.525
TV	Shure AD4	62 Avail Freq:
Rj	Shure AD4	471.025 471.625
Rj	Shure AD4	472.075 472.625
Rj	Shure AD4	473.275 474.625
Rj	Shure AD4	475.325 482.500
TV	Shure AD4	483.250 484.200
TV	Shure AD4	485.450 487.250
TV	Shure AD4	497.500 498.950
Rj	Shure AD4	506.500 506.950
Rj	Shure AD4	508.000 508.600
Rj	Shure AD4	509.300 518.600
Rj	Shure AD4	519.250 520.150
X	Shure AD4	521.550 522.300
X	Shure AD4	522.700 523.500
	Shure AD4	525.550 526.500
	Shure AD4	528.200 530.000
	Shure AD4	531.100 537.950
Rj	Shure AD4	539.400 541.500
X	Shure AD4	549.750 551.000
Rj	Shure AD4	553.800 555.100
	Shure AD4	555.550 556.150
	Shure AD4	558.850 567.200
	Shure AD4	568.300 569.850
TV	Shure AD4	570.600 578.550
TV	Shure AD4	579.050 579.450
TV	Shure AD4	582.550 583.750
TV	Shure AD4	584.700 586.350
TV	Shure AD4	587.850 589.250
TV	Shure AD4	590.250 591.500
TV	Shure AD4	592.050 602.600
TV	Shure AD4	603.050 603.650
TV	Shure AD4	604.800 614.800
TV	Shure AD4	TV: 15 (476-482) CKMI Global
Rj	Shure AD4	17 (488-494) CJNT Citytv
Rj	Shure AD4	19 (500-506) CBFT R-C
Rj	Shure AD4	21 (512-518) CBMT CBC
Rj	Shure AD4	26 (542-548) CIVM T-Q
TV	Shure AD4	29 (560-566) CFTU C. Savoir
		31 (572-578) CFHD Ici Mtl
		35 (596-602) CFJP Noovo
		37 (608-614) RA
<b>Var Device</b>		
Based on		
Type	Reject: 616.000 to 657.000	
Nb Freq Simu	and 663.000 to 698.000	
Tolerance 2 T	Reject: 698.000 to 806.000	
Tolerance 3 T	Micros	
Separation	Start: 470.125	
Start	Stop: 636.000	
Stop	(470.125 - 607.875	
	614.125 - 636.000)	

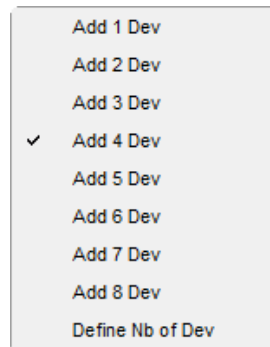
The calculation of Available Frequencies is optional (Options/Startup).

By clicking a device, the detail is displayed in the lower part of the section:

<b>Var Device</b>	Shure AD4D G55
Based on	Basic model
Type	Micros
Nb Freq Simult	2
Tolerance 2 TX	100
Tolerance 3 TX	50
Separation	400
Start	470.125
Stop	636.000
Increment	0.025
Image	None
Filter	32.00

1231 Devices X1 ▾

The status bar of the list shows us the number of devices and the "X1" button which allows you to set the number of devices added at the same time:

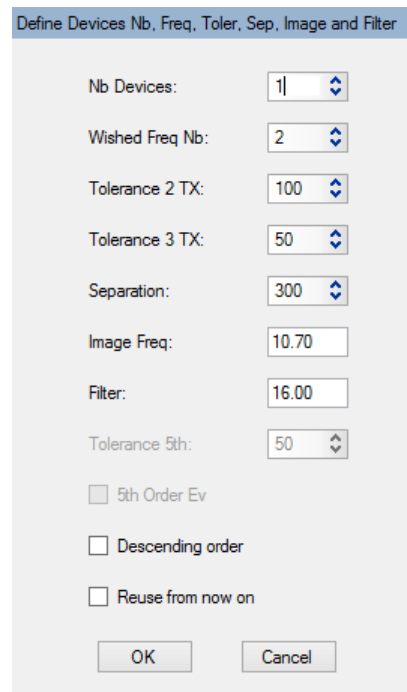


The status bar always indicates the number of devices to add:



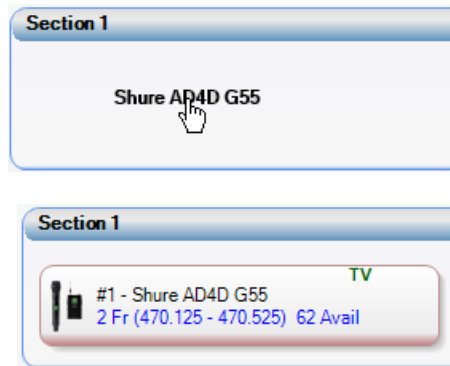
This value can be maintained or reset to 1 after use (Options/Startup).

It is also possible to define the parameters and the number of devices with "Define Nb of Dev":

A dialog box with a light gray background and a thin border. The title bar at the top reads "Define Devices Nb, Freq, Toler, Sep, Image and Filter". The dialog contains several input fields and checkboxes. The fields are: "Nb Devices:" with a value of "1", "Wished Freq Nb:" with a value of "2", "Tolerance 2 TX:" with a value of "100", "Tolerance 3 TX:" with a value of "50", "Separation:" with a value of "300", "Image Freq:" with a value of "10.70", and "Filter:" with a value of "16.00". There are also three checkboxes: "5th Order Ev" (unchecked), "Descending order" (unchecked), and "Reuse from now on" (unchecked). At the bottom of the dialog are two buttons: "OK" and "Cancel".

To use a predefined value for a device parameter, simply enter "0" as value. The option "Reuse from now on" allows to keep these settings for all the new additions.

To add one or more devices to a section, just drag its selection on a section (a group can contain only sections, and a section only devices):

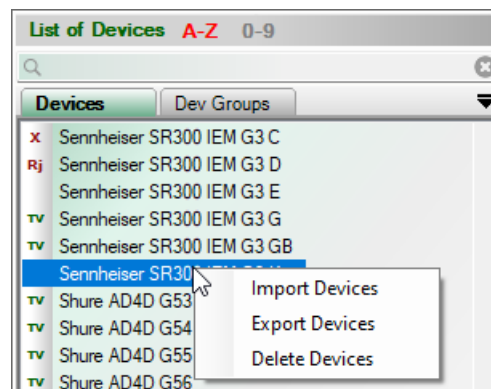


To insert a device, drag the selection on the device to insert it at this position. To add to the end, drop it into an unoccupied area of the section. It is also possible to select multiple devices with Ctrl + Device.

To move a device from one position to another, select the device, and drag to the desired position. This can be done in a section to another, from one document to another, or from one application to another (in this case the operation is a copy).

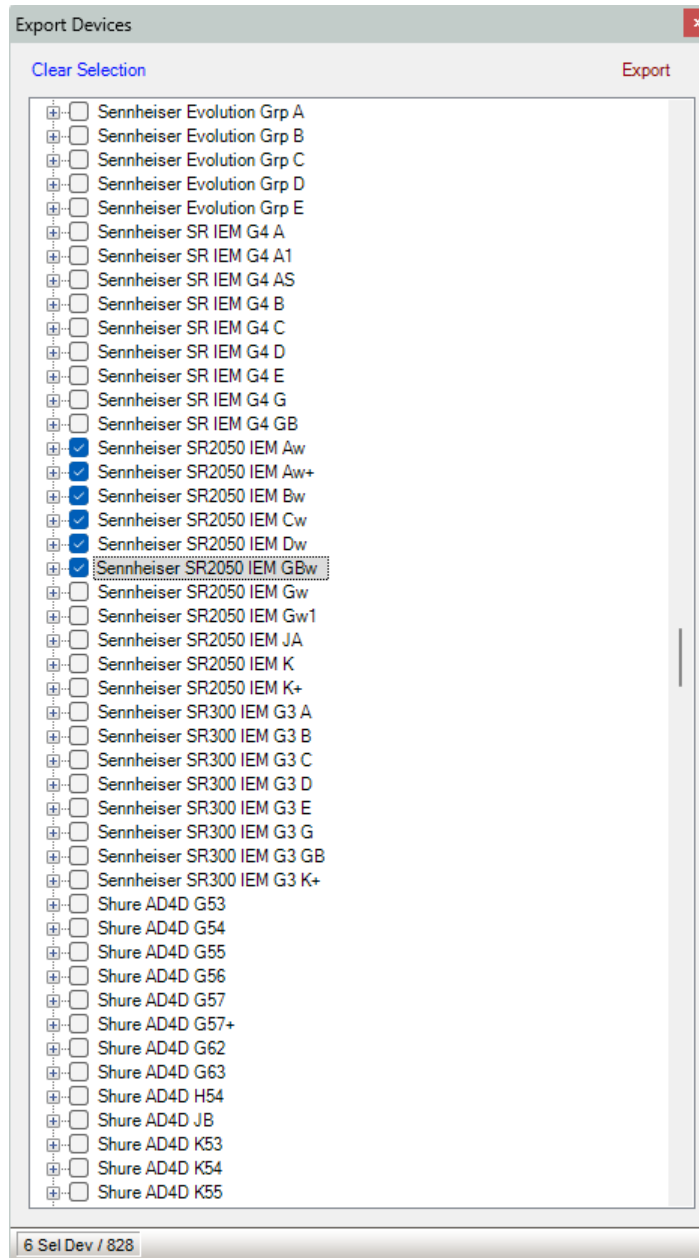
## 7.1 Export / Import / Delete Devices

From the list of devices on the left side of the views, it is now possible to export, import or delete devices. Simply call up a menu with the right mouse button on one of the devices in the list:



### 7.1.1 Export Devices

Just make the desired selection:

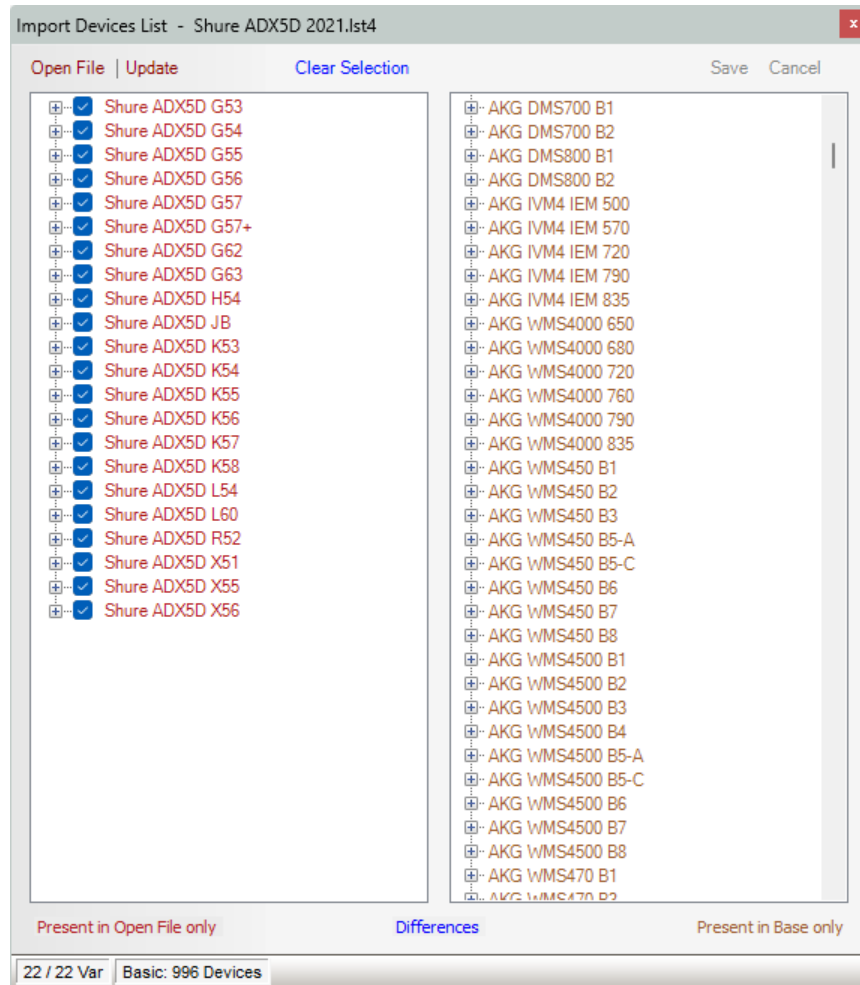


Then, click the “Export” command to enter the name of the new file to be saved. The original list is called "Appareils.lst4" and cannot be used as a new name.

**Reminder:** the device list file (Appareils.lst4), is the most crucial file in your EazyRF environment, make sure you have backup copies.

## 7.1.2 Import Devices

To import devices, simply open a device file (created by a user (export) or importing from eazyrf.com):

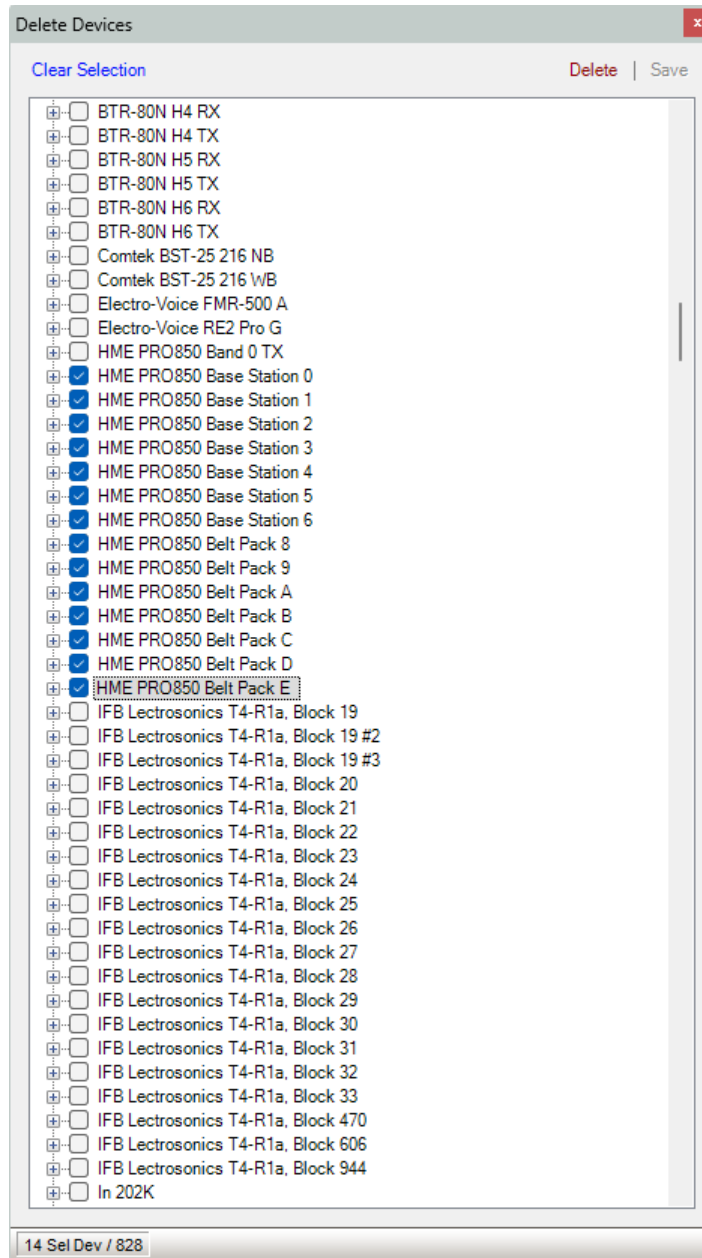


The differences between the two lists are displayed with different colors. Devices present only in the open list are in red, devices present only in the system list are in brown. A device present in both lists but with different parameters is displayed in blue. Identical devices in both lists are not displayed in the list on the left.

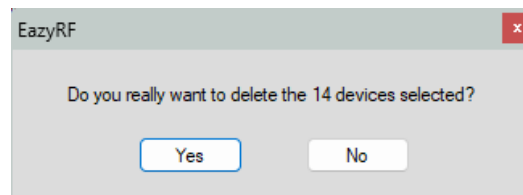
After selecting devices, just click on “Update” and “Save” everything.

### 7.1.3 Delete Devices

Select the devices to delete:



After completing your selection, just click on "Delete" and a message asks for confirmation:



Finally, you must "Save" the changes to the EazyRF devices file.

## 8 - Evaluation parameters

Variables Freq Dev	
Tolerance 2 TX	100
Tolerance 3 TX	50
Separation	300
Image	10.70
Filter	16.00
Start	470.000
Stop	560.000
Increment	0.005

### 8.1 Tolerance 2 TX (2<sup>nd</sup> order)

A 2 TX intermodulation is the one created by two carriers, the strongest of the intermodulations.

The 2 TX Tolerance is the value beyond which all the 2 TX intermodulations are accepted. The default value is 100 kHz on each side of the carrier.

The value 0 allows to accept all the 2 TX intermodulations, thus deactivate the 2 TX calculations.

### 8.2 Tolerance 3 TX (3<sup>rd</sup> order)

A 3 TX intermodulation is an intermodulation created by three carriers, less strong than the 2 TX, but equally important.

The 3 TX Tolerance is the value beyond which all the 3 TX intermodulations are accepted. The default value is 50 kHz on each side of the carrier.

The value 0 allows to accept all the 3 TX intermodulations, thus deactivate the 3 TX calculations.

### 8.3 Tolerance 5 TX (5<sup>th</sup> order)

For intermodulation, there is theoretically no limit to the number of carriers, but only the odd-numbered ones matter (except for 2 TX). The higher the number of TX (5 TX, 7 TX, etc.), the lower the intensity becomes, to the point where it is no longer significant (though 5 TX can occasionally cause interference).

The 5 TX Tolerance default value is 50 kHz and is editable only in the devices editor (chapter 13).

## 8.4 Separation

The separation is the minimal value between two frequencies, 300 kHz by default.

## 8.5 Image Frequency

The Image frequency is an old phenomenon of the analog world when two frequencies were separated by 10.7 MHz (default value), both receivers decode the same signal. With the digital world, this value can be null. If it remains active, it does not matter, the result of calculations will be a little bit different, but that does not really change the number of possible frequencies in a given area. Just erase the value to disable it :

Image		=	Image	None
-------	--	---	-------	------

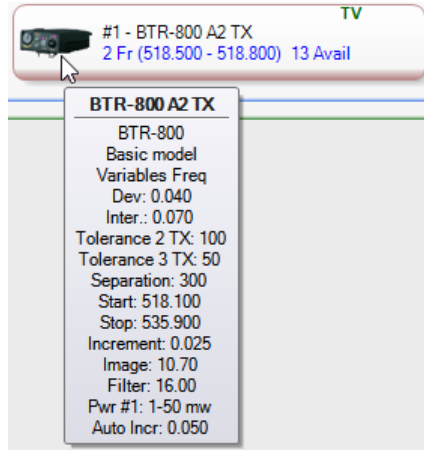
## 8.6 Filter

The value used to determine the frequency range to be considered when calculating intermodulation distortion (16 MHz by default). Thus, for a carrier at 500 MHz, all frequencies between 484 MHz and 516 MHz will be included in the intermodulation distortion calculation. Every device has an electronic filter in the amplification circuit for the signal received by the antenna to limit interference. This value can be found in the user manuals; 16 MHz is good value for analog devices and 32 MHz for digital devices. For In-Ear devices, increasing this value may help if the RF environment is very congested.

## 8.7 Start, Stop and Increment

With Variable Devices, there is a frequency range available to program the device. For example, the transmitter of a BTR-800 A2 operates between the frequencies 518.100 and 535.900 by step of 25 kHz. So the fields Start, Stop and Increment are used to define these data.

The BTR-800 has a possibility of 712 frequencies. EazyRF uses an algorithm to accelerate the calculations. A value of increment is fitted to the parameters of evaluation and is called Auto-Increment. For example, the increment value of a BTR is 25 kHz, the auto-increment is set to 50 kHz (depending of others parameters). The value can be seen with the device detail:



The screenshot shows a software interface with a device icon and a tooltip. The tooltip contains the following text:

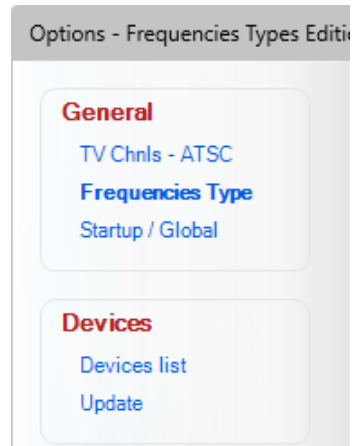
**BTR-800 A2 TX**  
BTR-800  
Basic model  
Variables Freq  
Dev: 0.040  
Inter.: 0.070  
Tolerance 2 TX: 100  
Tolerance 3 TX: 50  
Separation: 300  
Start: 518.100  
Stop: 535.900  
Increment: 0.025  
Image: 10.70  
Filter: 16.00  
Pwr #1: 1-50 mw  
Auto Incr: 0.050

For Fixed devices, these parameters don't exist.



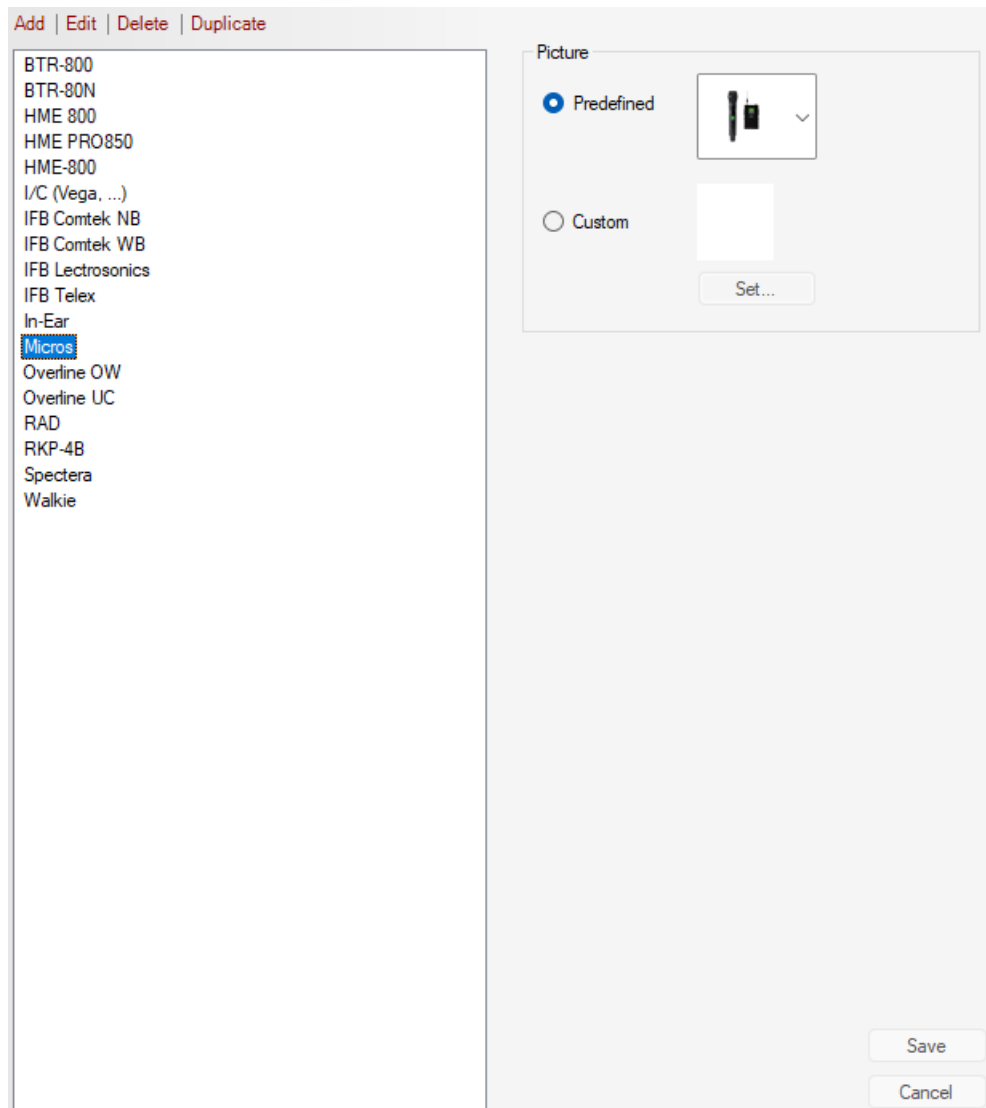
## 9 - Devices list Edition

The “Options” menu allows you to set, among other things, the frequency type and the list of devices:



### 9.1 Frequencies Type

The frequency type is used to embed an image of the device's representation.



The image can be defined from a list included or customized as needed.

It is this image that is used in the Global view devices.

Add | Edit | Delete | Duplicate

Allows you to manage the items of the list.

## 9.2 Devices list Edition

The format of the device list varies depending on the type of device; for fixed-frequencies device:

Add Var Add Fix Duplicate Edit Delete

- Mipro ACT-747 6UA
- TV Mipro ACT-818 5NU
- TV Mipro ACT-818 5UA
- Mipro ACT-818 6UA
- TV Mipro ACT-828 5NU
- TV Mipro ACT-828 5UA
- Mipro ACT-828 6UA
- TV Mipro ACT-848 5NU
- TV Mipro ACT-848 5UA
- Mipro ACT-848 6UA
- Overline OW RX
- TV Overline OW TX
- Fix Overline RX Essential plan A
- Fix Overline RX Essential plan B
- Fix Overline RX M34
- Fix Overline RX R41
- Fix Overline RX R46
- Fix Overline RX R47spe
- Fix Overline RX R48
- Fix Overline RX R50
- Fix Overline RX R52
- Fix Overline RX R57
- Fix Overline RX R59
- TV Overline TX Essential plan A
- TV Overline TX Essential plan B
- TV Fix Overline TX T23
- TV Fix Overline TX T25
- TV Fix Overline TX T26
- TV Fix Overline TX T30
- Fix Overline TX T30m
- TV Fix Overline TX T33
- Fix Overline TX T36
- TV Fix Overline TX T38
- TV Fix Overline TX V
- Fix PSM-200
- Fix PSM-400
- Fix PSM-600 H
- Fix PSM-600 HA
- Fix PSM-600 HB
- Fix PSM-600 HC
- Fix PSM-600 HD

Model

Source  
 Based on:  

Type: Overline UC

Power Level: 1

Simult Freq Nb: 1

Selectable

Freq	CH
485.150	1
485.875	2
487.025	3
487.875	4
488.400	5
489.350	6
490.000	7
491.100	8
491.525	9
492.750	10
493.700	11
495.025	12
495.875	13

(22)

Active


Operating mode: Standard

Channels Nb:

Tolerance 2 TX: 200

Tolerance 3 TX: 150

Separation: 1000



1-50 mw  
2 TX: 0 kHz  
3 TX: 0 kHz  
5 TX: 0 kHz

Image Frequency:  
  If undefined, none

Filter: 24.00

TV Channels:  
17 (488-494 MHz) C.JN  
19 (500-506 MHz) CBF

Save  
Cancel

Variable-frequencies device:

Add Var Add Fix Duplicate Edit Delete

- TV Sennheiser SR2050 IEM Gw
- TV Sennheiser SR2050 IEM Gw1
- Sennheiser SR2050 IEM JA
- Sennheiser SR2050 IEM K
- Sennheiser SR2050 IEM K+
- TV Sennheiser SR300 IEM G3 A
- Sennheiser SR300 IEM G3 B
- Sennheiser SR300 IEM G3 C
- Sennheiser SR300 IEM G3 D
- Sennheiser SR300 IEM G3 E
- TV Sennheiser SR300 IEM G3 G
- TV Sennheiser SR300 IEM G3 GB
- Sennheiser SR300 IEM G3 K+
- TV Shure AD4D G53
- TV Shure AD4D G54
- TV Shure AD4D G55**
- TV Shure AD4D G56
- TV Shure AD4D G57
- TV Shure AD4D G57+
- TV Shure AD4D G62
- TV Shure AD4D G63
- TV Shure AD4D H54
- Shure AD4D JB
- Shure AD4D K53
- Shure AD4D K54
- TV Shure AD4D K55
- TV Shure AD4D K56
- TV Shure AD4D K57
- Shure AD4D K58
- Shure AD4D L54
- Shure AD4D L60
- Shure AD4D P55
- Shure AD4D R52
- Shure AD4D X51
- Shure AD4D X55
- Shure AD4D X55 P1
- Shure AD4D X55 P2
- Shure AD4D X55 P3
- Shure AD4D X56
- Shure AD4D Z16
- TV Shure AD4Q G53

Model

Source  
 Based on:

Type: Micros

Power Level: 1

Simult Freq Nb: 2

Range:

Start	Stop
470.125	607.875
614.125	636.000

(2)

Separation: 0.025

6387 Freq

Active

Operating mode: Standard

Channels Nb:

Tolerance 2 TX: 100

Tolerance 3 TX: 50

Separation: 400

1-50 mw  
2 TX: 0 kHz  
3 TX: 0 kHz  
5 TX: 0 kHz

Image Frequency: If undefined, none

Filter: 32.00

TV Channels:

- 15 (476-482 MHz) CKM
- 17 (488-494 MHz) CJM
- 19 (500-506 MHz) CBF
- 21 (512-518 MHz) CBM
- 26 (542-548 MHz) CIV
- 29 (560-566 MHz) CFT
- 31 (572-578 MHz) CFI
- 35 (596-602 MHz) CFJ
- 37 (608-614 MHz) RA

Save

Cancel

### 9.2.1 Fixed device

A fixed-frequency device has selectable frequencies with predetermined values (it is not programmable).

The editor allows you to manage these devices by defining their list of frequencies and channels:

Template

Source  
 Based on:

Type:  
Overline UC

Dev: 0.075, Inter: 0.100

Power Level: 1

Simult Freq Nb: 1

Selectable

Fréq.	CH
485.150	1
485.875	2
487.025	3
487.875	4
488.400	5
489.350	6
490.000	7
491.100	8
491.525	9
492.750	10
493.700	11
495.025	12
495.875	13

(22)

Active

Tolerance 2 TX: 200

Tolerance 3 TX: 150

Separation: 1000

Image Frequency: If undefined, none

Filter: 24.00

TV Channels: 19 (500-506 MHz) D R

Save

Cancel

A device can be defined as the base model (the first in the chain). Another device can be created from a base model and inherited from its frequencies (used for case numbers).

The frequency type uses the predefined types previously (section 9.1).

Tolerance values are the accepted intermodulation limit values for this device. Separation is the minimum distance between two frequencies.

The power level can vary from 1 to 4, with 1 being the normal level. This level influences the rejection of intermodulations according to the transmission power (chapter 25). The displayed match (Tolerance values) is the value of the global parameters.

The number of frequencies is the number of frequencies to be found when adding to one of the views.

The image frequency is an intermediate frequency used during demodulation with older devices. As a result, it was impossible to differentiate two carriers separated from the value used (10.7 MHz was the norm). This value is optional (if not defined, unused).

The filter of the device represents the difference of the frequencies supported during the calculations. For a value of 16 MHz, the frequencies between the carrier minus 16 MHz and the carrier plus 16 MHz will be used in the calculations. A bit like an electronic filter.

It is possible to copy a frequency list from Excel. The value of the frequency must be on the 1st column and the value of the channel on the 2nd column. You must move both columns simultaneously.

In addition, Excel must be started in administrator mode (shortcut settings, advanced).

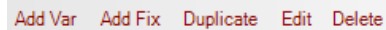
The "Active" command is used to activate / deactivate a device.

When a device is turned off, it no longer appears in the Add Devices list. Thus, instead of removing a device from the list, it can simply be disabled and remain in the list.

The names of disabled devices are displayed in gray.

To activate / deactivate several devices continuously, make sure that the list of devices has keyboard focus (the selection border has a fine dashed border). Use the following keys on the keyboard to make changes: "Enter" toggles the value Active, "+" (keypad or + / =) to activate the value Active and "-" (keypad - / \_)" allows to disable the Active value. The next device is automatically selected and the operation is ready to be repeated.

The commands :



Add Var Add Fix Duplicate Edit Delete

Manage the items in the list.

## 9.2.2 Variable device

Model

Source  
 Based on:

Type:  
 Micros

Power Level:

Simult Freq Nb:

Range:

Start	Stop
470.125	607.875
614.125	636.000

(2)  
 Separation:   
 6387 Freq

Active

Operating mode

Channels Nb:

Tolerance 2 TX:   
 Tolerance 3 TX:   
 Separation:

1-50 mw  
 2 TX: 0 kHz  
 3 TX: 0 kHz  
 5 TX: 0 kHz

Image Frequency:  
 If undefined, none

Filter:

TV Channels:  
 15 (476-482 MHz) CKM  
 17 (488-494 MHz) CJNT  
 19 (500-506 MHz) CBF  
 21 (512-518 MHz) CBM  
 26 (542-548 MHz) CIV  
 29 (560-566 MHz) CFTL  
 31 (572-578 MHz) CFH  
 35 (596-602 MHz) CFJF  
 37 (608-614 MHz) RA

Save  
 Cancel

A variable frequency device has as a Start frequency, a Stop frequency and an Increment step.

EazyRF uses a list of start/stop frequencies to define devices with multiple frequency ranges.

The list is automatically sorted in ascending numerical order. To delete an item, simply right-click on it:

Range:

Start	Stop
941.625	951.875
952.975	956.125
956.575	959.725

Image Frequency:  
 If undefined, none

Filter:

Remove 956.575 - 959.725 MHz

Like fixed frequency devices, a variable frequency device can be defined as a basic device or based on another (and inherited from its parameters).

The parameters Model, Type, Tolerance, Separation, Power Level, Image Frequency, Filter and Number of Frequencies have the same usage as for Fixed Frequency Devices.

The Start, Stop and Increment values are the heart of this kind of device. The list of TV channels included in this data is for information only.

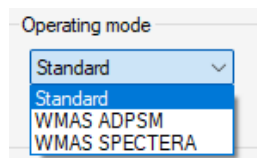
The "Active" command is used to activate / deactivate a device.

When a device is turned off, it no longer appears in the Add Devices list. Thus, instead of removing a device from the list, it can simply be disabled and remain in the list.

The names of disabled devices are displayed in gray.

To activate / deactivate several devices continuously, make sure that the list of devices has keyboard focus (the selection border has a fine dashed border). Use the following keys on the keyboard to make changes: "Enter" toggles the value Active, "+" (keypad or + / =)" to activate the value Active and "-" (keypad - / \_)" allows to disable the Active value. The next device is automatically selected, and the operation is ready to be repeated.

The operating mode is used to configure WMAS-type devices, such as the Shure ADPSM series and the Sennheiser Spectera:



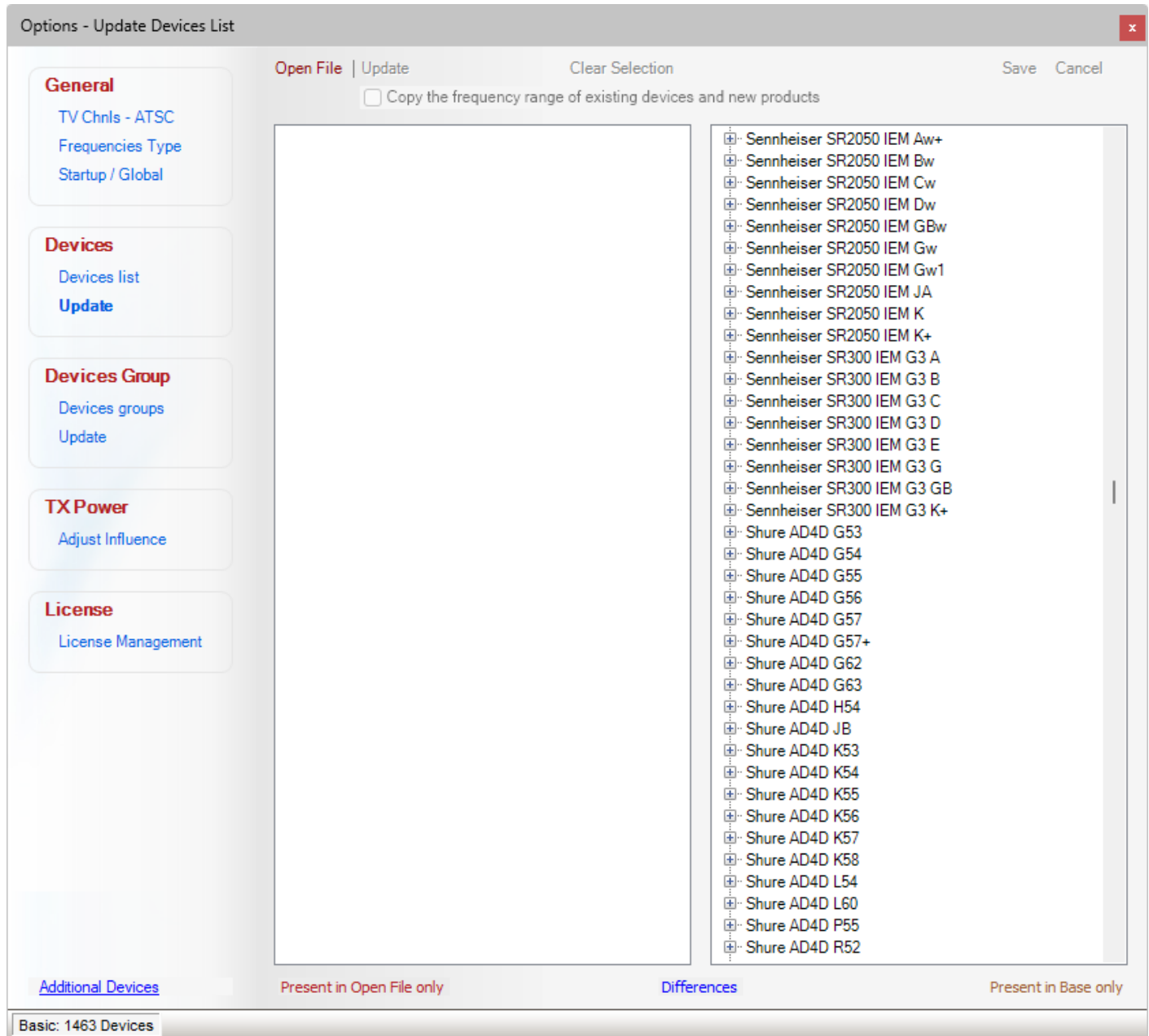
The commands:

Add Var Add Fix Duplicate Edit Delete

Manage the items in the list.

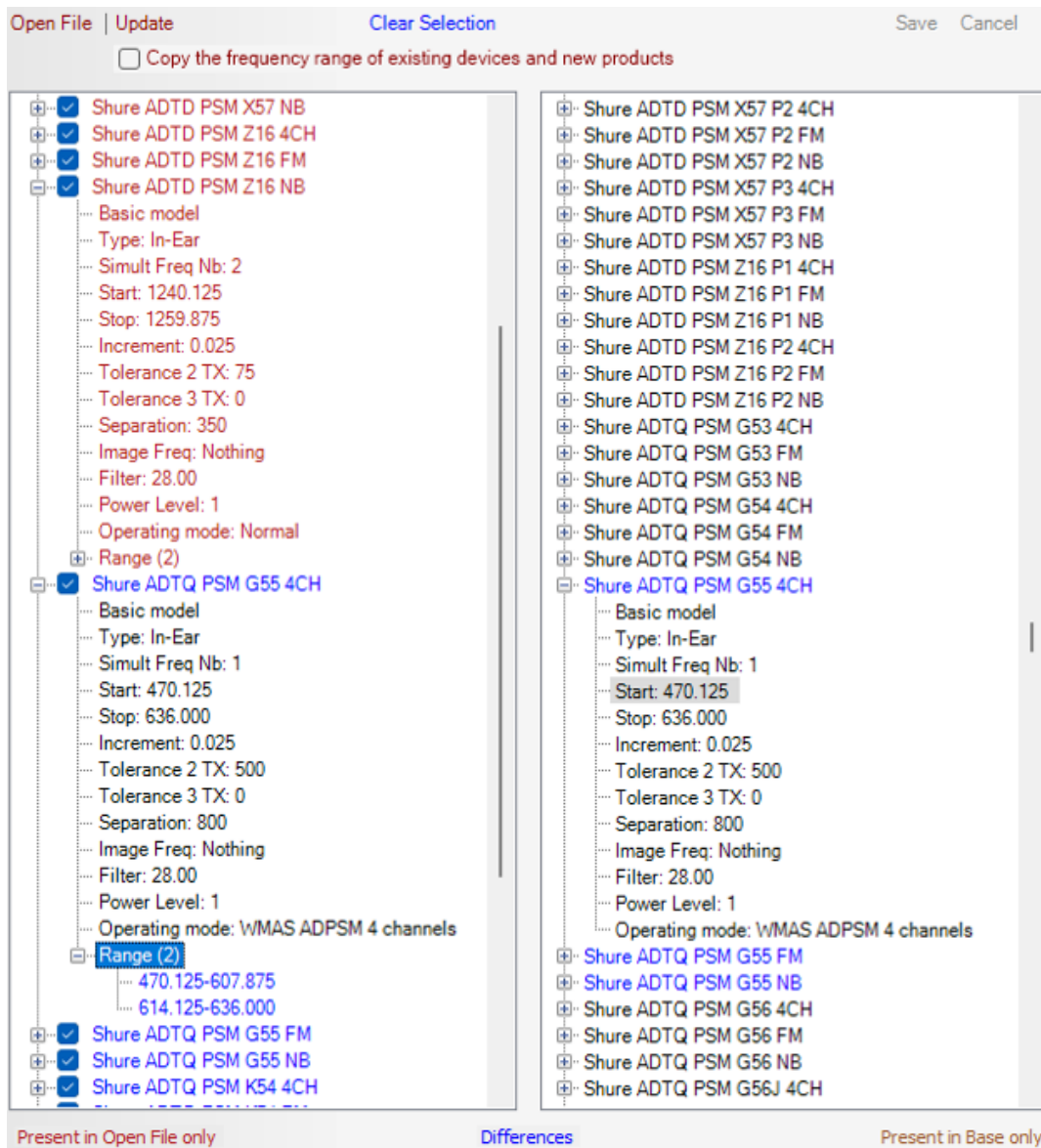
## 10 - Devices list update

The Devices / Update command in the Options module allows you to update the devices list:



The “Additional Devices” link allows you to download lists of additional devices from the EazyRF server.

To get started, open a device list using the “Open File” command. Once open:



The open file is listed on the left; the list on the right shows the current system list.

The differences between the two lists are displayed with different colors. The devices present only in the open list are in red, the devices in the system list only are in brown. A device presents in both lists but with differences in parameters is displayed in blue. The identical devices in both lists are not displayed in the list on the left for a little more clarity.

The contents of the parameters can be examined by opening the detail of the device (+).

Devices in the open file can be selected individually before updating. By default, when a file is opened, devices that are not in the basic list are selected.

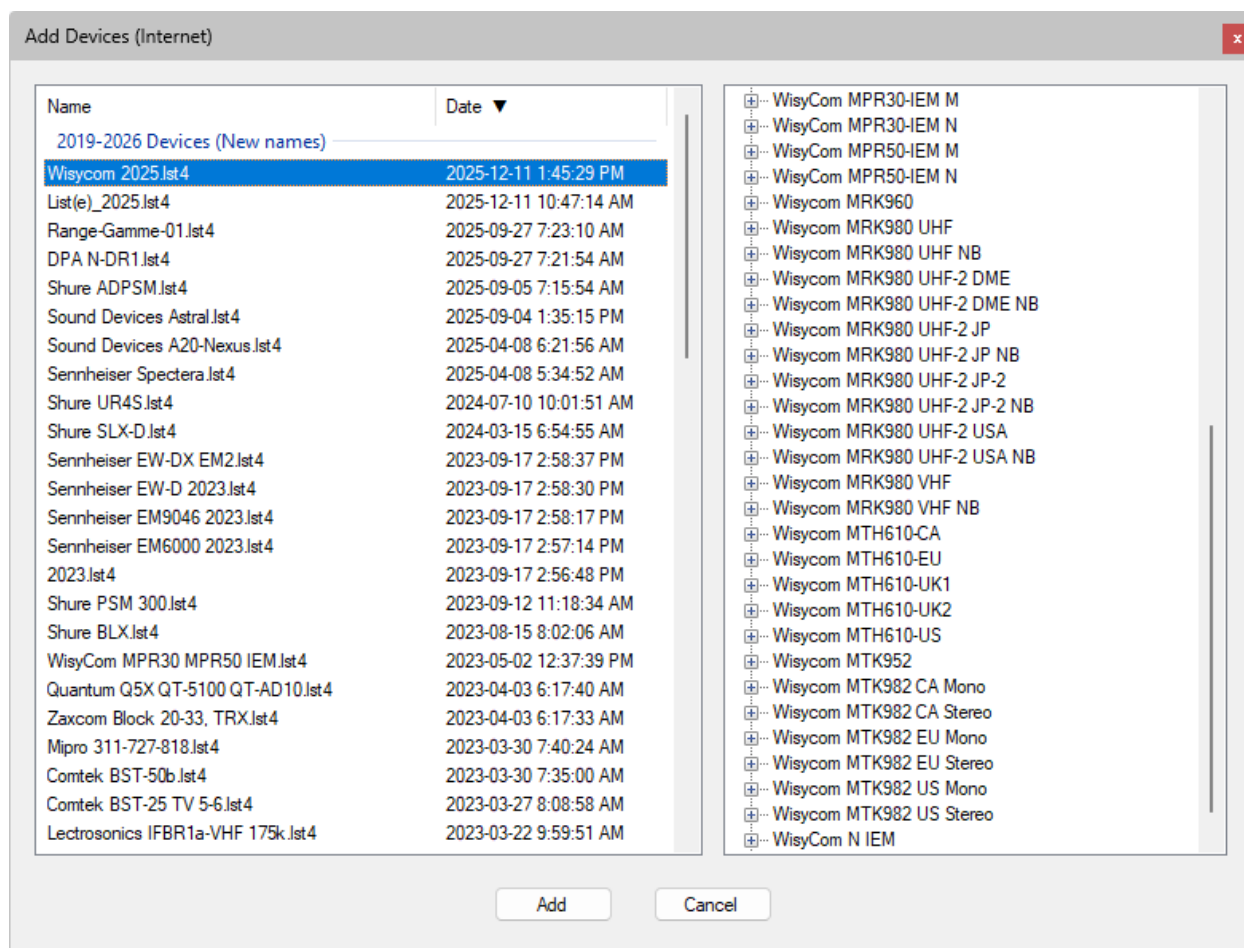
Finally, it is necessary to complete the operation by the Save command.

The option “Copy the frequency range of existing devices and new products” allows you to update only the frequency range while retaining the settings from your own list.

The update can only be made from the opened file to the list of the system, not the other way.

## 10.1 Additional devices

The “Additional Devices” command (bottom-left corner, Options menu) opens the import module for additional devices available on the EazyRF website:



The contents of a list can be viewed on the right side of the screen. Devices not included in your device list appear in blue, and the number of new devices is shown at the bottom of the list.

To add a list to EazyRF, simply make a selection and use the “Add” command. The list’s contents are displayed in the “Devices – Update” module (section 10.5) just as they are with the “Open File” command:

Open File | Update Clear Selection Save Cancel

Copy the frequency range of existing devices and new products

<ul style="list-style-type: none"><li><input checked="" type="checkbox"/> Wisycom MTH610-CA</li><li><input checked="" type="checkbox"/> Wisycom MTH610-EU</li><li><input checked="" type="checkbox"/> Wisycom MTH610-UK1</li><li><input checked="" type="checkbox"/> Wisycom MTH610-UK2</li><li><input checked="" type="checkbox"/> Wisycom MTH610-US</li></ul>	<ul style="list-style-type: none"><li>WisyaCom M IEM</li><li>Wisycom MCR54 B1 UK</li><li>Wisycom MCR54 B12 EU</li><li>Wisycom MCR54 B12 US</li><li>Wisycom MCR54 B14 UK</li><li>Wisycom MCR54 B2 EU</li><li>Wisycom MCR54 B2 US</li><li>Wisycom MCR54 B6 US</li><li>WisyaCom MPR30-IEM M</li><li>WisyaCom MPR30-IEM N</li><li>WisyaCom MPR50-IEM M</li><li>WisyaCom MPR50-IEM N</li><li>Wisycom MRK960</li><li>Wisycom MRK980 UHF</li><li>Wisycom MRK980 UHF NB</li><li>Wisycom MRK980 UHF-2 DME</li><li>Wisycom MRK980 UHF-2 DME NB</li><li>Wisycom MRK980 UHF-2 JP</li><li>Wisycom MRK980 UHF-2 JP NB</li><li>Wisycom MRK980 UHF-2 JP-2</li><li>Wisycom MRK980 UHF-2 JP-2 NB</li><li>Wisycom MRK980 UHF-2 USA</li><li>Wisycom MRK980 UHF-2 USA NB</li><li>Wisycom MRK980 VHF</li><li>Wisycom MRK980 VHF NB</li><li>Wisycom MTH610-CA</li><li>Wisycom MTH610-EU</li><li>Wisycom MTH610-UK1</li><li>Wisycom MTH610-UK2</li><li>Wisycom MTH610-US</li><li>Wisycom MTK952</li><li>Wisycom MTK982 CA Mono</li><li>Wisycom MTK982 CA Stereo</li><li>Wisycom MTK982 EU Mono</li><li>Wisycom MTK982 EU Stereo</li><li>Wisycom MTK982 US Mono</li><li>Wisycom MTK982 US Stereo</li><li>WisyaCom N IEM</li></ul>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Present in Open File only Differences Present in Base only

## 11 - Devices groups

There are two types of device groups; the first method is the one used prior to version 4.55. Groups are created in the “Options” module.

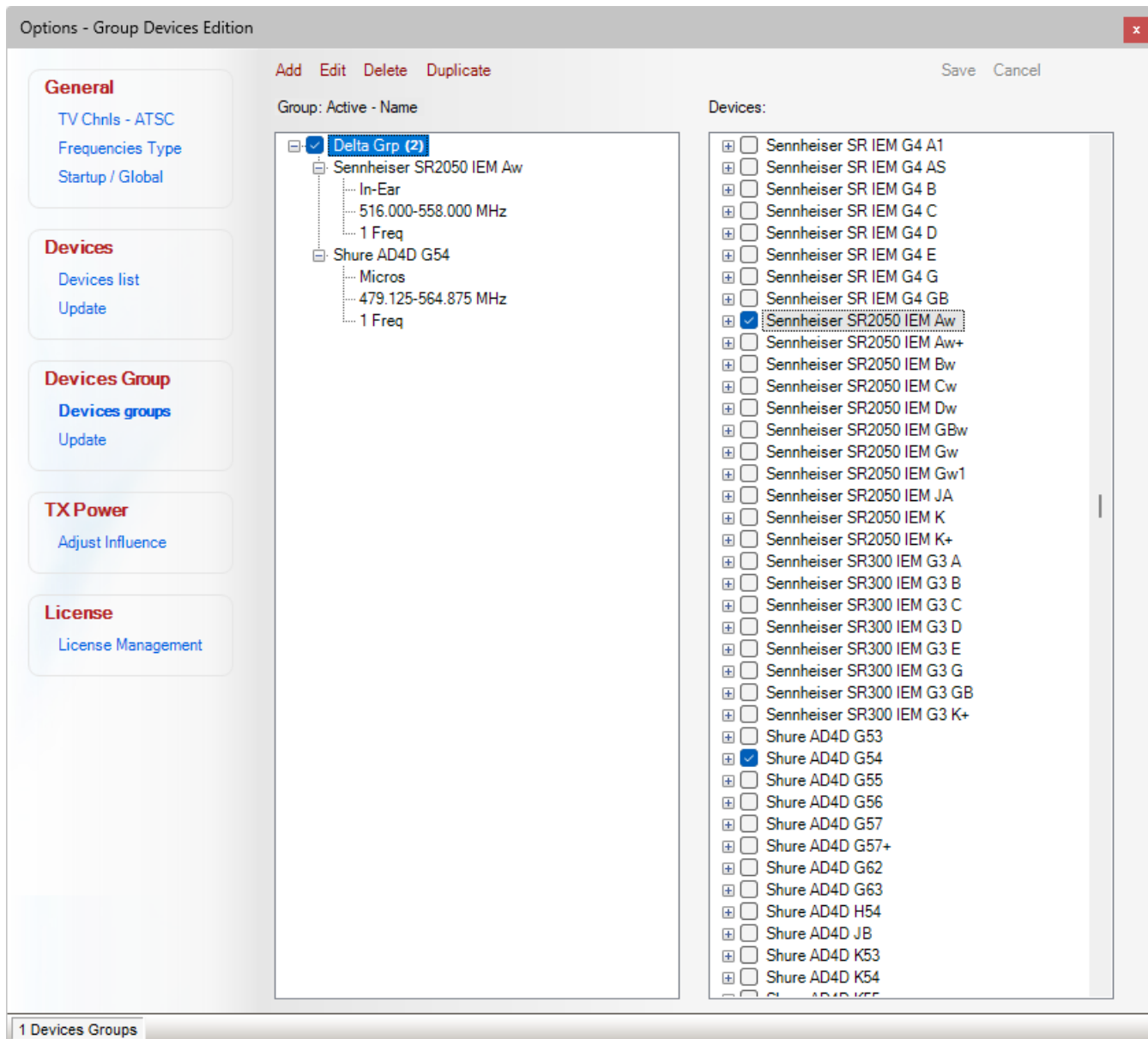
The first method is essentially equivalent to selecting multiple devices in the “Devices” list.

The second method is simpler and more comprehensive; you simply need to convert a section of devices into “Device Groups.”

### 11.1 Devices groups – 1rst method

A device group can contain an unlimited number of variable or fixed frequency devices. The number of devices of each type is definable. In addition, the number of frequencies of each device is changeable and the value of each frequency can be entered manually (in an existing environment).

Let's see how to manage these groups.



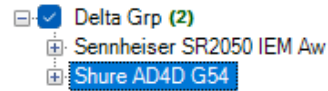
The list on the left contains all defined device groups. The list on the right contains the list of system devices (variable and fixed devices).

To add a device to a group just select it in the list on the right.

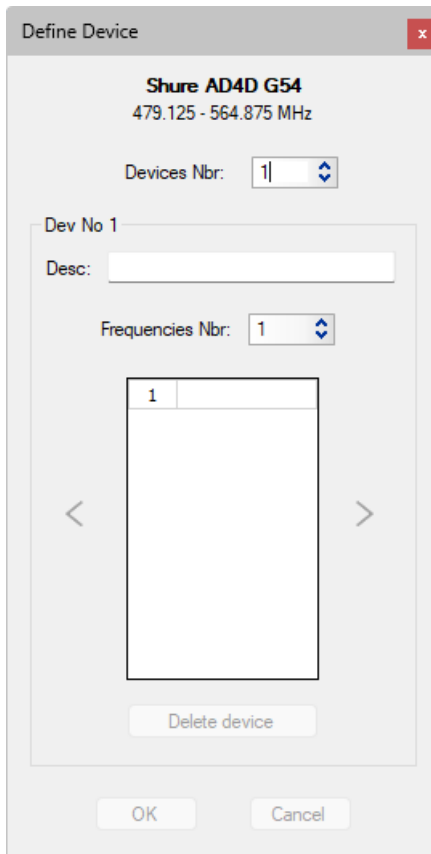
Management of the list on the left is done with these commands:

Add Edit Delete Duplicate

To change the number of devices or frequencies, double-click on the device name:



What calls the editor:



When the number of devices is greater than 1, to decrease the quantity of device, it is necessary to select one of the devices by moving with the left arrows right and to use the command "Delete Device":

Define Device\*

**Shure AD4D G54**  
479.125 - 564.875 MHz

Devices Nbr: 2

Dev No 2

Desc:

Frequencies Nbr: 2

1	
2	

< >

Delete device

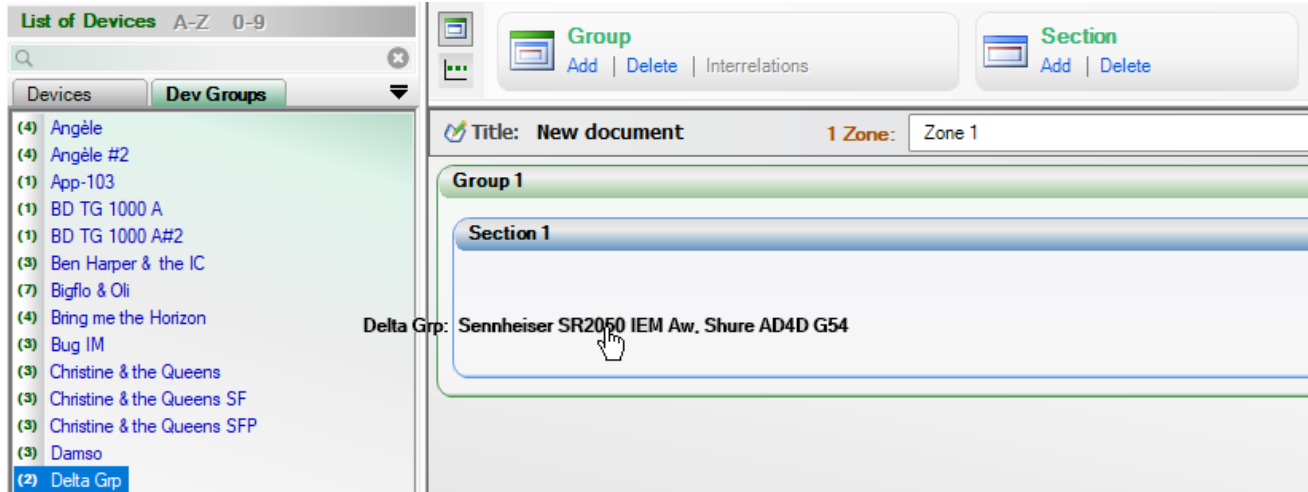
OK Cancel

To set frequencies manually, simply enter the desired frequencies:

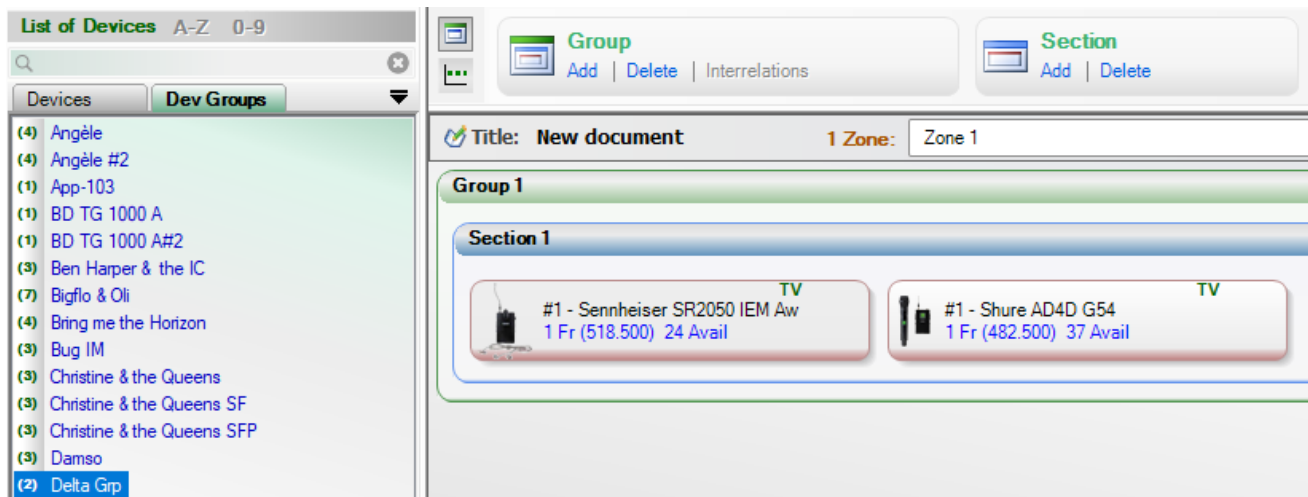
1	491.525
2	

When frequencies are set manually, EazyRF does not calculate the frequencies of this device when the group is added.

To use these groups, from global view, drag the group name:



This gives:



## 11.2 Devices groups - 2<sup>nd</sup> method

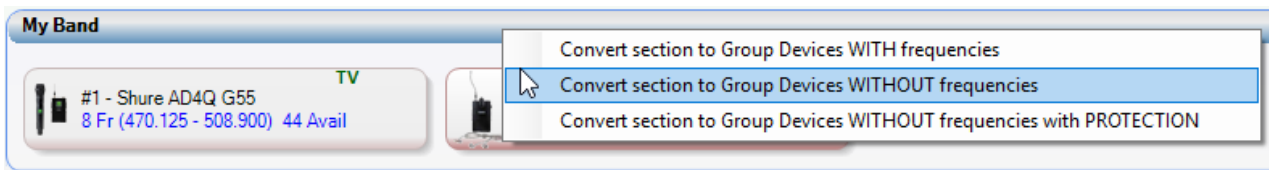
To define this new type, just transform a section of devices into a group of devices. The goal is to reuse a set of devices for a group of musicians for example.

New groups are displayed in blue:



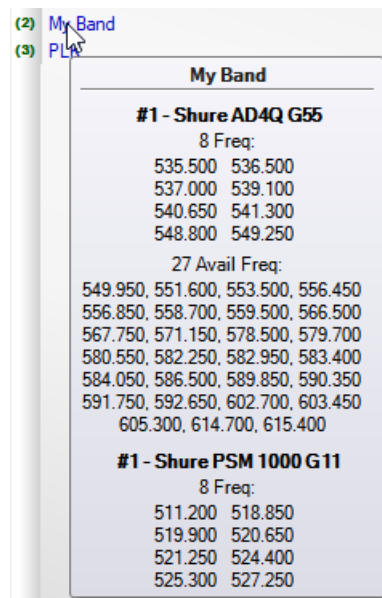
The groups of 1rst method are in black.

To create a new group from a section, just click on the section header with the right mouse button:



The menu offers the choice of creating a group with the frequencies already assigned or of creating a group without assigned frequencies, with or without protection. A group without frequencies and with protection only contains the skeleton of needs.

The name of the section is used as the name of device group; this name is assigned to the section used during the drag and drop operation (only if the section does not contain any device):





The group frequency calculation preview is displayed by moving the mouse pointer over the group names, as in the device list.

EazyRF automatically saves the new group in the device groups file (GrpAppareil.grp).


To edit a device group, just double click on the group name:

Devices Group Edition - Christine & the Queens\*

Name:   Duplicate  Delete

Devices list:

- #1 - Shure PSM 1000 J8-J8E (P)
- #1 - Shure AD4D G56 (P)
- #1 - Sennheiser EM3732-II N (P)

Description:  #1

Based on:

Start:  Stop:  Increment:

Descending order

5th Order Evaluation (if Global) Tolerance 5th:

Fr Nbr:   Protected  Off

Tolerance 2 TX:

Tolerance 3 TX:





Separation:

Image Freq:

Filter:

No	Description	Freq	Intermodulation
1		554.125	28
2		554.425	28
3		554.825	28
4		555.325	28
5		555.675	28
6		556.125	28
7		556.675	28
8		558.275	28
9		559.025	28
10		559.675	28
11		560.775	29
12		562.825	29

Delete Selected device

The editor allows you to modify all the evaluation parameters of each device, to duplicate the group, or to delete it. You can move to the next or previous group with the arrows at the bottom of the screen. An “Undo / Redo” system makes it possible to correct the changes made.

You can remove a device from a group, but you cannot add devices. To add devices, you have to go back to the document, make the changes and save the device group again. Why, because the goal of these new groups is to have custom devices, not devices with basic parameters.

### 11.2.1 Export Devices Groups

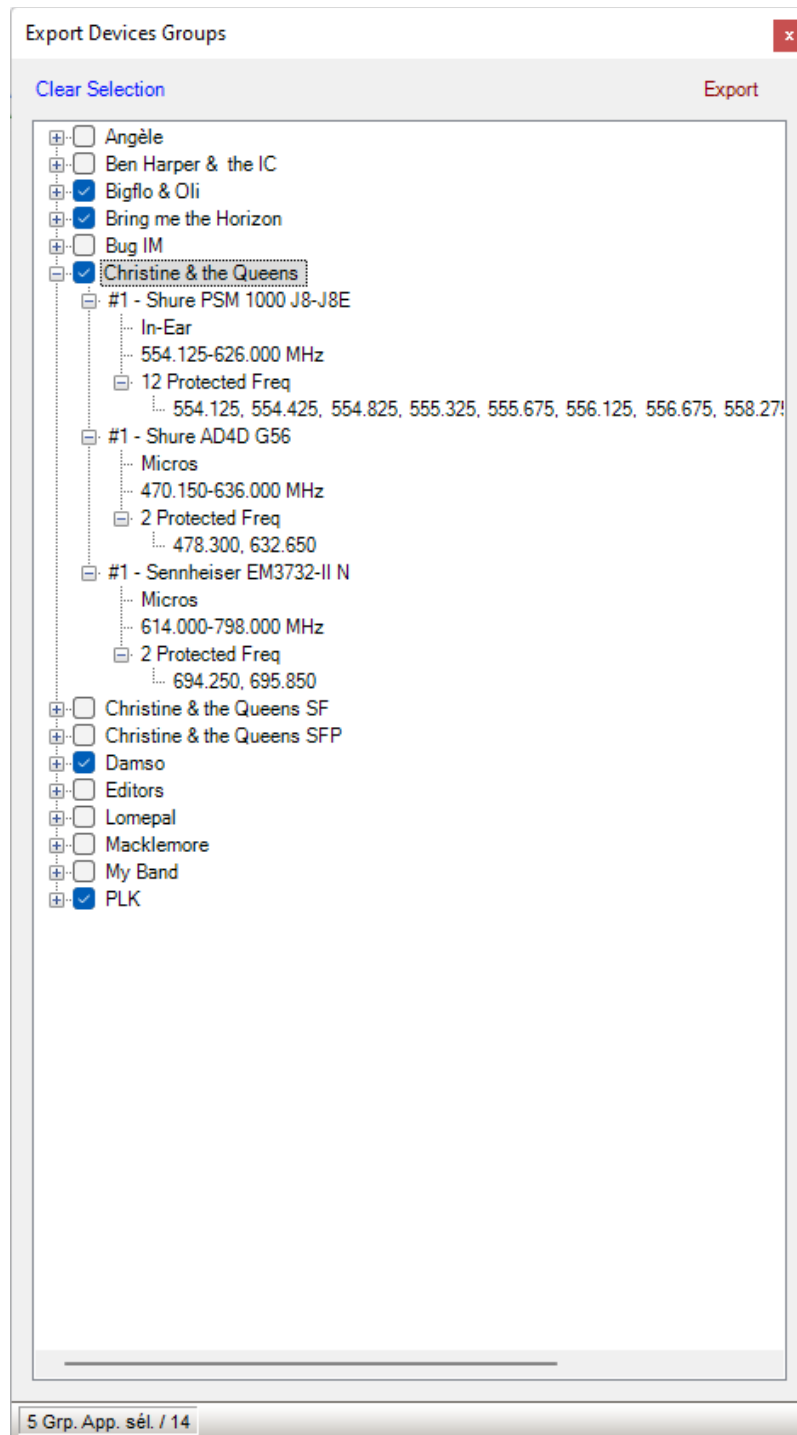
You can export parts of a devices groups file.

Simply right-click on the list of device groups to display the menu:

Simply right-click on the list of device groups to display the menu:



The “Export Groups” editor:



The list of system devices groups is displayed, just select the groups to export. Finally, the “Export” command saves the selected list under a group name. Note that the name “GrpAppareil.grp” is reserved for EazyRF.

The files thus created can be imported via the “Import Groups” utility, thus facilitating the exchange of data between partners.

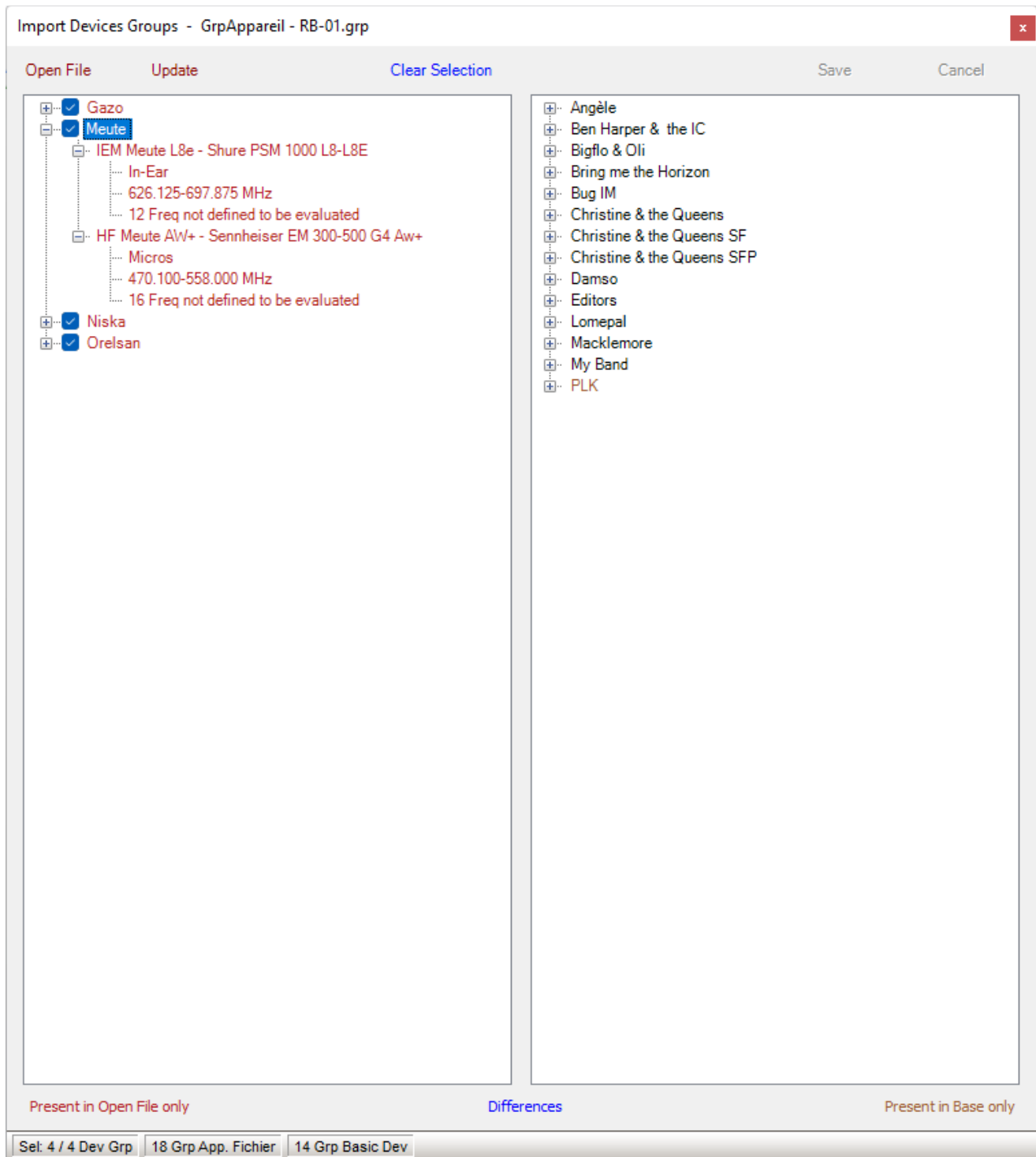
## 11.2.2 Import Devices Groups

You can import parts of a devices groups file.

Simply right click on the list of devices groups to display the menu:



The “Import Groups” editor:



To get started, just open a devices groups file (created with the Export command).

The differences between the two lists are displayed with different colors. Devices groups present only in the open list are in red; devices groups present in the system list only are in brown. A group of devices present in both lists but with differences in parameters is displayed in blue. The groups of identical devices in the two lists are not displayed in the left list for a little more clarity.

The contents of the settings can be examined by opening the device detail (+).

The devices groups of the opened file can be selected individually before performing the update. By default, when opening a file, the groups that are not in the basic list are selected.

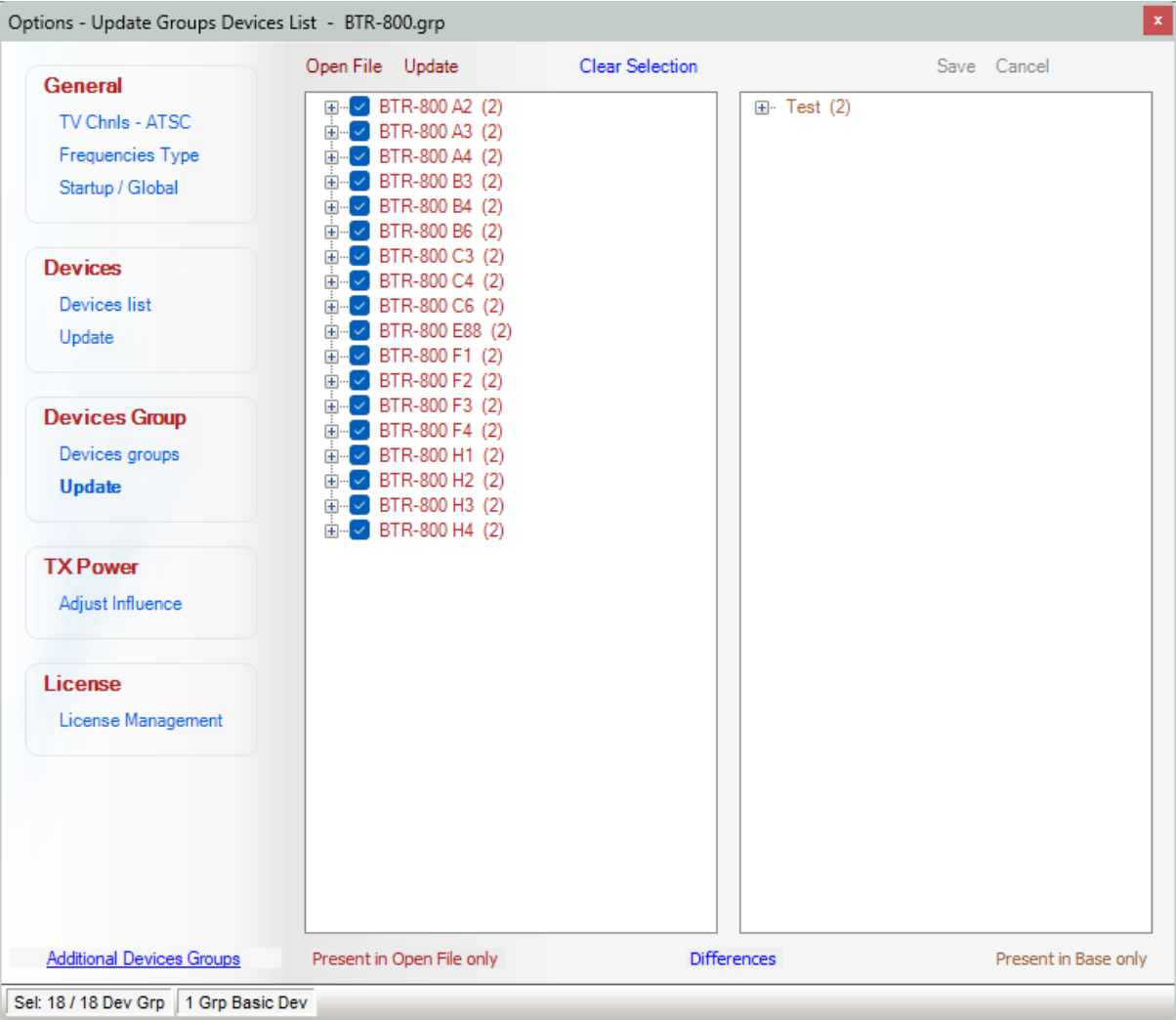
Finally, you must end the operation with the Save command.

Updating can only be done from the open file to the system list, never the other way around.

## 12 - Update devices group

Just like the device list, the device group list can be updated from a device group file. A hyperlink allows you to retrieve additional groups from the website.

The “Updates” command in the “Device Groups” section of the “Options” module allows you to manage updates:



The update works like that of the devices.

The differences between the two lists are displayed with different colors. The device groups present only in the open list are in red, the device groups in the system list only are brown. A device group in both lists but with different settings is displayed in blue. The groups of identical devices in the two lists are not displayed in the list on the left for a little more clarity.

The contents of the parameters can be examined by opening the device details (+).

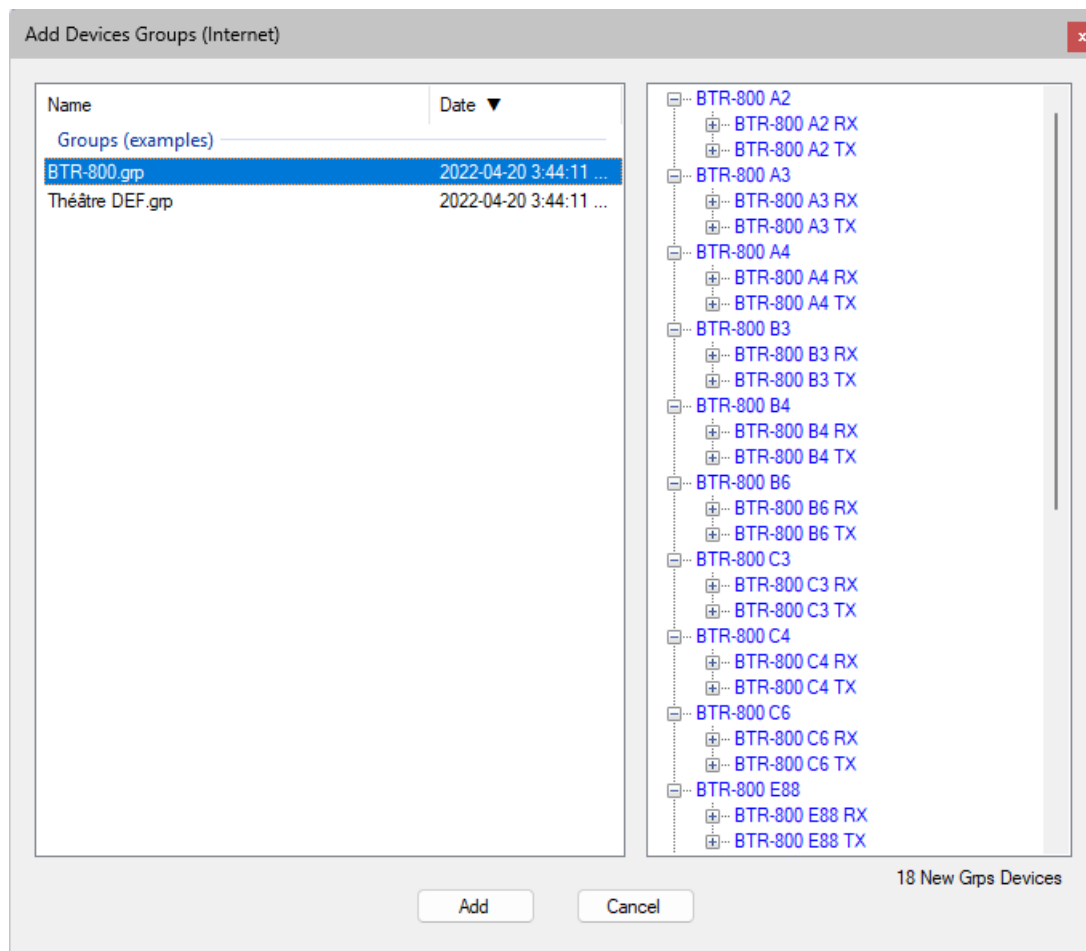
Device groups in the open file can be selected individually before updating. By default, when you open a file, the groups that are not in the base list are selected.

Finally, you must complete the operation with the Save command.

The update can only be done from the open file to the list of the system, never in the other direction.

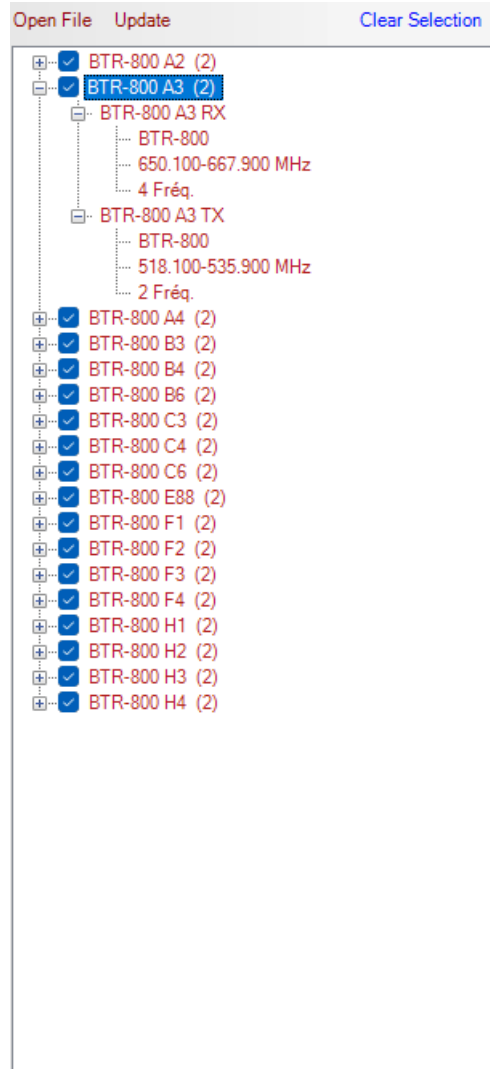
## 12.1 Additional Devices Groups

This command allows you to import device group lists from the EazyRF website and open it in the "Devices Group - Update" module:



This module works the same way as the "Additional Devices" module; the "Add" command is equivalent to opening a file.

Simply select the desired groups:





## 13 - Edit a device

The editing window of a device is called by making a double-click on a device in a section:

Device Edition - #1 - Shure AD4D G57

Description: **Section 1 - Group 1 - Zone 1**

#1

Device: Shure AD4D G57

Start: 470.125 Stop: 607.875 Increment: 0.025

Auto Start:  TV Channels: 15 (476-482 MHz) CKMI Global ...

Descending order

5th Order Evaluation (if Global) Tolerance 5th: 50

TX Power Level: 1 1-50 mw 2 TX: 0 kHz 3 TX: 0 kHz 5 TX: 0 kHz

Fr Nbr: 8  Protected  Manual  Avail Freq

Tolerance 2 TX: 100

Tolerance 3 TX: 50

Separation: 400

Image Freq: None

Filter: 32.00

Random

Clear

Scans

No	Description	Freq	Intermodulation
1		470.125 14	
2		470.525 14	
3		471.025 14	
4		471.625 14	
5		472.075 14	
6		472.625 14	
7		473.275 14	
8		474.625 14	

55 Avail Freq

14 475.325 R  
16 482.500  
16 483.250  
16 484.200  
16 485.450  
16 487.250  
18 497.500  
18 498.950  
20 506.500  
20 506.950  
20 508.000  
20 508.600  
20 509.300  
22 518.600  
22 519.250  
22 520.150

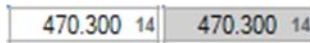
Undo: Increase Freq Nbr to 8

OK Cancel

This window allows you to edit all the parameters affecting the evaluation of the device. It is also possible to use the list of available frequencies to make changes. To classify the frequencies in ascending or descending order, use the arrows at the top of the header "Freq". It is also possible to classify the frequencies by description. It is also possible to auto-increment the description frequencies using Ctrl + Alt (as seen above) and import data from Excel.

The editor has its own system of "Undo/Redo" which allows to cancel/repeat each operation. The command "Undo/Redo" of the "Global View" and "Detailed View" panes allows you to cancel/repeat the complete editing done on a device.

In addition, the editor now has a visual effect when moving available frequencies to clearly identify the destination, the background color varies:



This visual effect is also available in the "Global View" pane.

The format of the editor changes when there are intermodulations in order to display the details of them:

Device Edition - #1 - Shure AD4D G57

Description: **Section 1 - Group 1 - Zone 1**  
 #1

Device: Shure AD4D G57

Start: 470.125 Stop: 607.875 Increment: 0.025

Auto Start:  Descending order:  5th Order Evaluation (if Global):

TV Channels: 15 (476-482 MHz) CKMI Global ...

Tolerance 5th: 50

TX Power Level: 1 (1-50 mw 2 TX: 0 kHz 3 TX: 0 kHz 5 TX: 0 kHz)

Fr Nbr: 8  Protected  Manual  Avail Freq

Tolerance 2 TX: 100 Tolerance 3 TX: 50 Separation: 400 Image Freq: None Filter: 32.00

Nb IM: 10

Frequency	Intermodulation
470.125	
470.525	50 kHz - 471.050 & 471.625 25 kHz - 471.050 & 472.075 & 472.625
471.050	25 kHz - 470.525 & 472.075 & 472.625 25 kHz - 471.625 & 472.075 & 472.625
471.625	50 kHz - 470.525 & 471.050 25 kHz - 471.050 & 472.075 & 472.625
472.075	25 kHz - 470.525 & 471.050 & 472.625 25 kHz - 471.050 & 471.625 & 472.625
472.625	25 kHz - 470.525 & 471.050 & 472.075 25 kHz - 471.050 & 471.625 & 472.075
473.275	
474.625	

Scans

No	Description	Freq	Intermodulation
1		470.125 14	
2		470.525 14	50 kHz - 471.050 & 471.62
3		471.050 14	25 kHz - 470.525 & 472.07
4		471.625 14	50 kHz - 470.525 & 471.05
5		472.075 14	25 kHz - 470.525 & 471.05
6		472.625 14	25 kHz - 470.525 & 471.05
7		473.275 14	
8		474.625 14	

55 Avail Freq

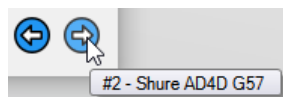
Frequency	Description
470.525	#1 - Shure AD4D G57
471.050	#1 - Shure AD4D G57
472.075	#1 - Shure AD4D G57
472.625	#1 - Shure AD4D G57

10/10 IM

OK Cancel

EazyRF offers several data editing methods. The result is the same regardless of the method used. The objective is to eliminate the navigation to find commands. Normally there is always a method of edition within the reach of the user.

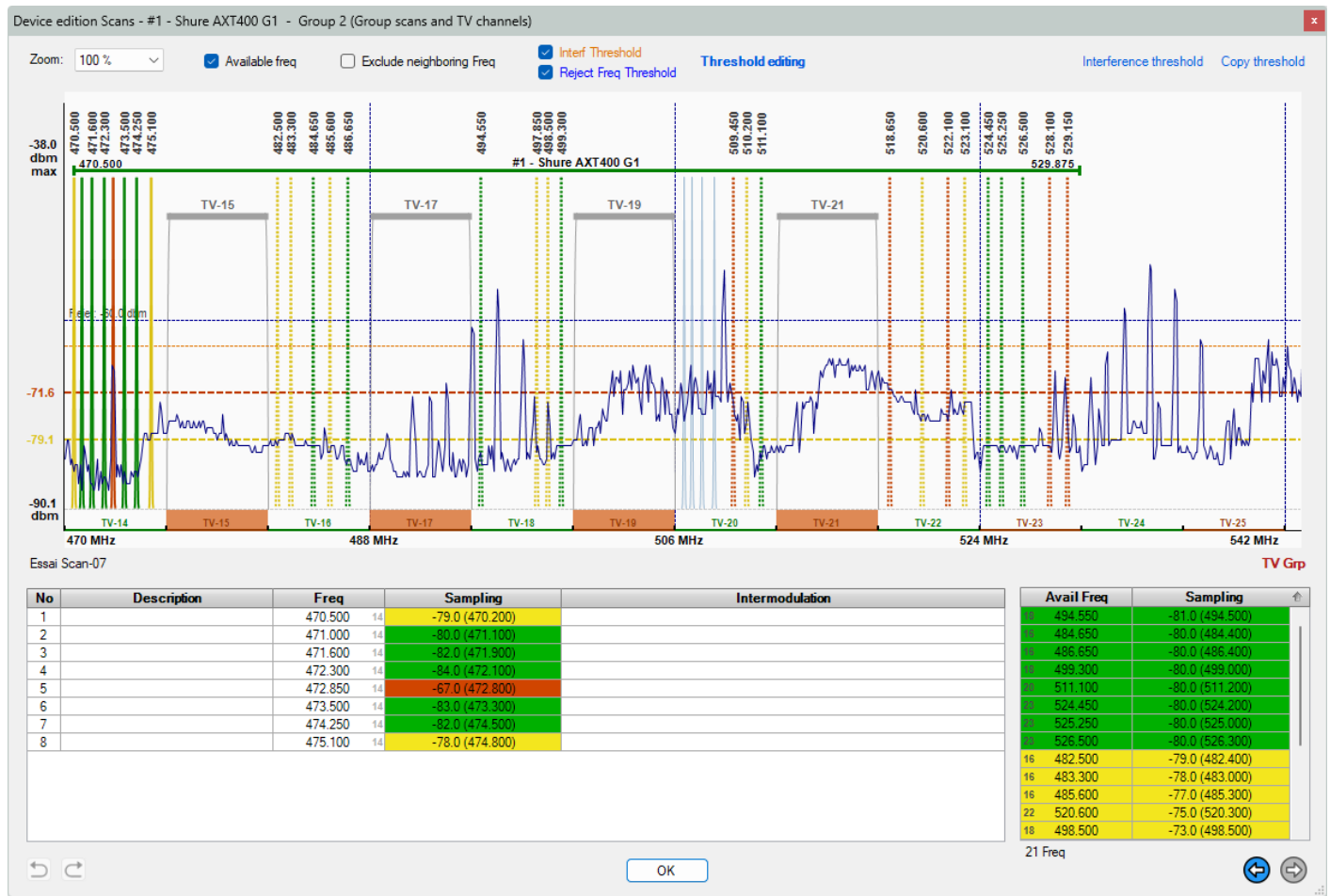
The buttons:



Allow you to move from device to device without having to close the editor and open it with another device.

### 13.1 Device scans

The "Scans" command of the device editor calls up the sampling analysis module according to a device, i.e. for the range of frequencies covered by the device:



The title bar displays which type of scan file is used by the group associated with the device, either that of the group or of the document (see section 5.6), the scans are displayed in gray when they come from the document or in blue if they belong to the group.

The name of the scan file is displayed at the bottom of the sampling display area on the left.

If the group manages the TV channels, the display "TV Grp" appears at the bottom right of the sampling display area:

**TV Grp**

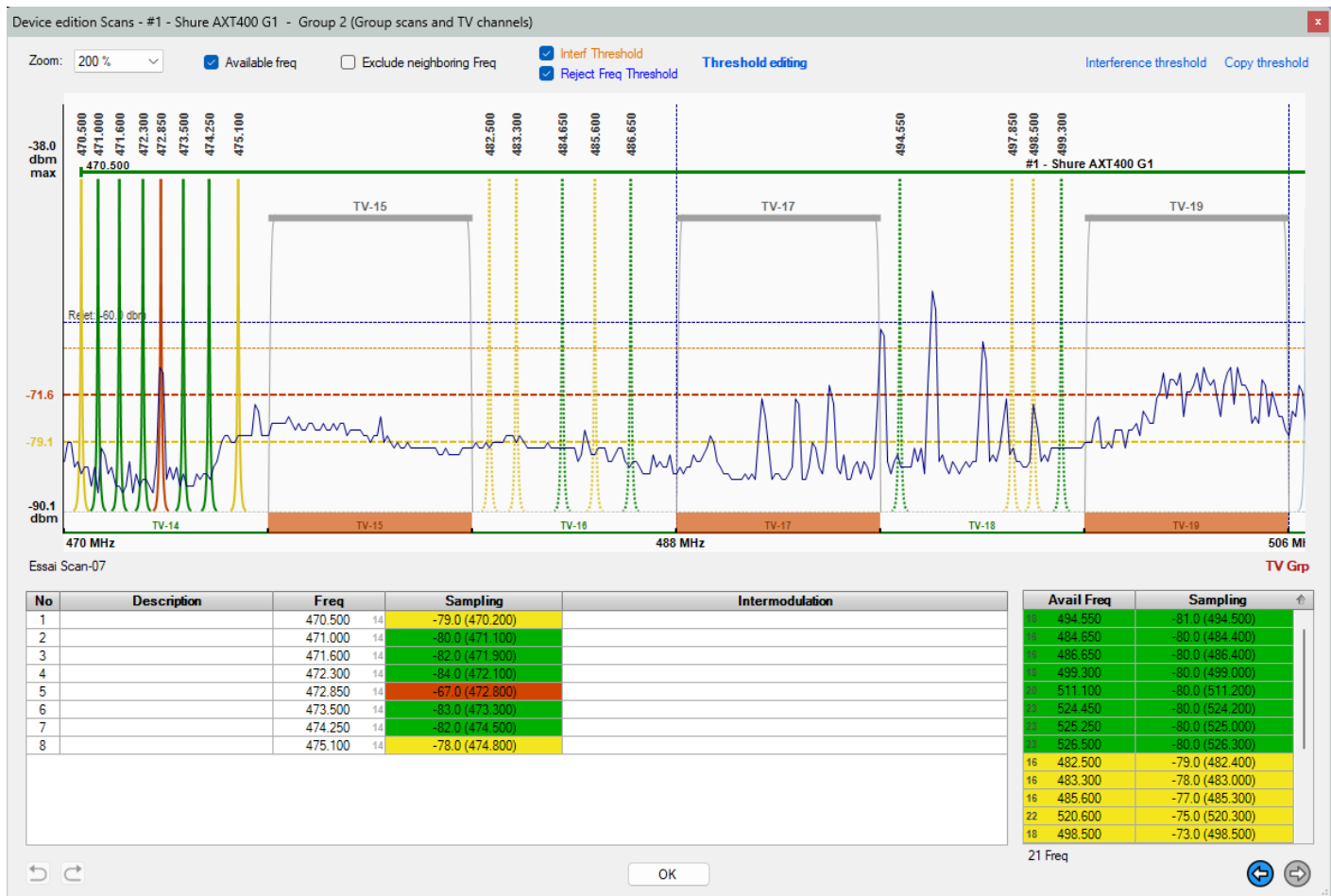
**Group TV channels**

- 11 (198-204 MHz) CFTM TVA
- 12 (204-210 MHz) CFCF CTV
- 15 (476-482 MHz) CKMI Global
- 17 (488-494 MHz) CJNT Citytv
- 19 (500-506 MHz) CBFT R-C
- 21 (512-518 MHz) CBMT CBC
- 26 (542-548 MHz) CIVM T-Q
- ~~29 (560-566 MHz) CFTU.C. Savoie~~
- 31 (572-578 MHz) CFHD Ici MtI
- 35 (596-602 MHz) CFJP Noovo
- 37 (608-614 MHz) RA

TV channels can also be modified as in the scan module, but the difference is that in this editor, there is no need to save TV channels because the change is made immediately for real-time viewing. As this editor has Undo/Redo commands, changing TV channels uses it:

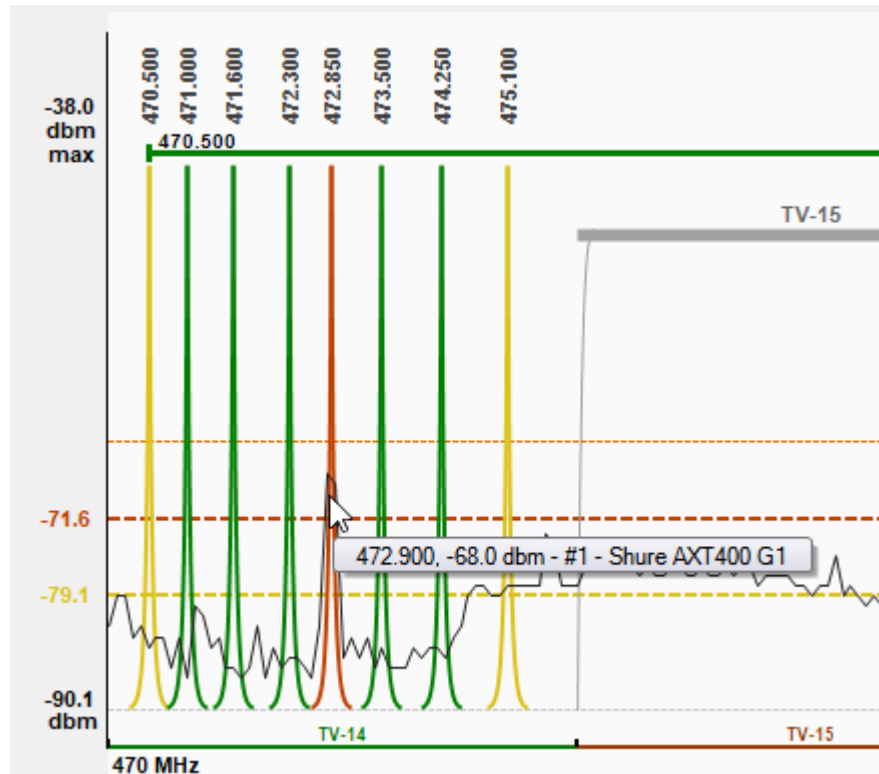


By default, EazyRF displays the full range of frequencies, the "Zoom" command displays more details:



The frequency analysis is based on the level of the samples, the value of the rejection width of the interference frequencies (0.300 MHz by default) is used for the calculation (document parameters).

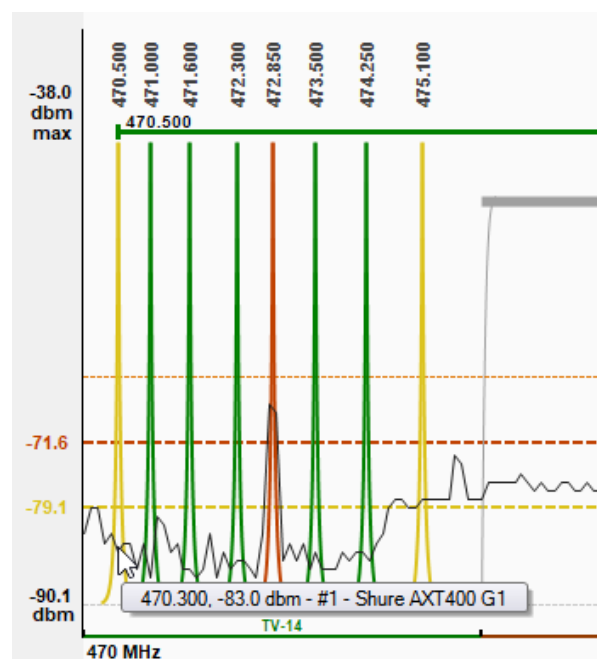
A yellow tolerance threshold is used to detect the frequencies that can be reached by sampling:



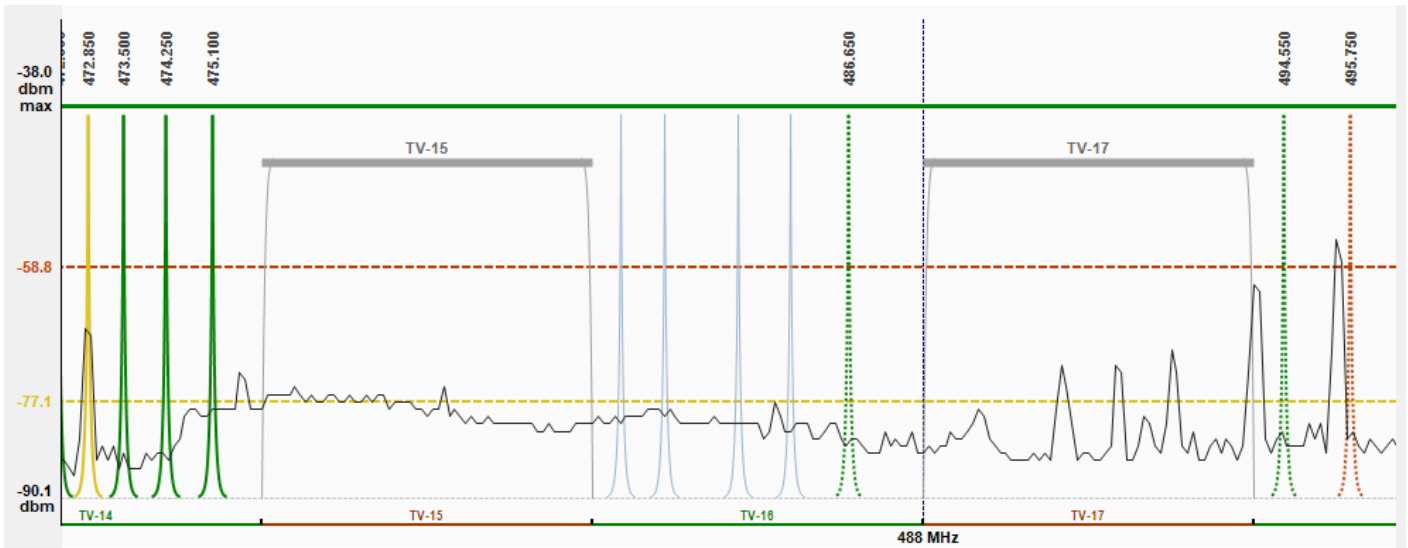
The detection threshold of the red zone is fixed here at -71.6 dbm, the frequency 472.850 is near a sampling peak at 472.900, level -68.0 dbm. The affected frequency is displayed in red to illustrate the possible problem.

The yellow zone makes it possible to detect the frequencies less reached by the samplings.

The frequencies shown in green are located in an area where sampling is less accentuated.



See section X for more details on detection thresholds.

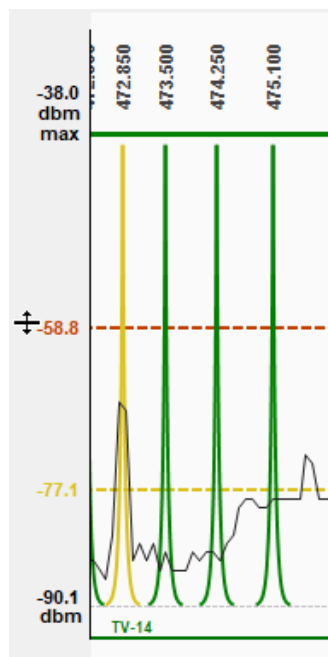


The available frequencies are also analyzed, they are displayed in dotted lines. Frequencies in light blue are frequencies assigned to other devices (without being analyzed), but within the spectrum of the displayed device.

The following controls allow you to display or not the available frequencies and those of other devices:

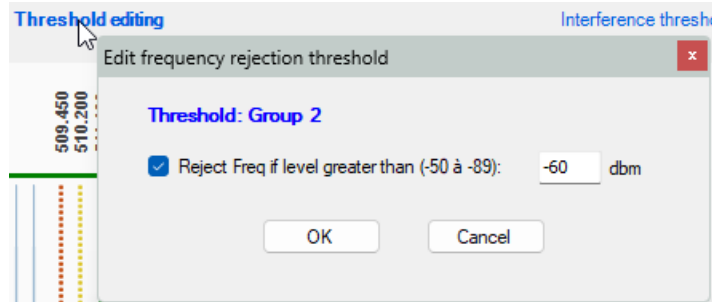
Available freq     
  Exclude neighboring Freq

To move the tolerance level, all you have to do is drag the text of the level displayed in the left part:



At this point, the mouse pointer changes shape to indicate the displacement.

The rejection zone threshold can be modified; the threshold is defined for the document or for the group and not for a device:



### 13.1.1 Device Scans - Results analysis

EazyRF analyzes the frequencies (basic and available) and displays the result using a colored background (green, yellow and red):

No	Description	Freq	Sampling	Intermodulation
1		470.500	14 -79.0 (470.200)	
2		471.000	14 -80.0 (471.100)	
3		471.600	14 -82.0 (471.900)	
4		472.300	14 -84.0 (472.100)	
5		472.850	14 -67.0 (472.800)	
6		473.500	14 -83.0 (473.300)	
7		474.250	14 -82.0 (474.500)	
8		475.100	14 -78.0 (474.800)	

We see that the frequency 470.500 is in the yellow zone because of the sampling 470.200 of level -79.0 dbm. The frequency 472.850 is found in the red zone because of the sampling 472.800 of level -67.0 dbm.

The analysis of the available frequencies goes a little further:

Avail Freq		Sampling		↑
8	494.550	-81.0	(494.500)	↑
8	484.650	-80.0	(484.400)	
8	486.650	-80.0	(486.400)	
8	499.300	-80.0	(499.000)	
16	511.100	-80.0	(511.200)	
16	524.450	-80.0	(524.200)	
16	525.250	-80.0	(525.000)	
16	526.500	-80.0	(526.300)	
16	482.500	-79.0	(482.400)	
16	483.300	-78.0	(483.000)	
16	485.600	-77.0	(485.300)	
22	520.600	-75.0	(520.300)	
18	498.500	-73.0	(498.500)	↓

Avail Freq		Sampling		↑
16	482.500	-79.0	(482.400)	↑
16	483.300	-78.0	(483.000)	
16	485.600	-77.0	(485.300)	
22	520.600	-75.0	(520.300)	
18	498.500	-73.0	(498.500)	
22	523.100	-73.0	(522.800)	
18	497.850	-72.0	(497.700)	
20	510.200	-72.0	(509.900)	
22	522.100	-71.0	(522.300)	
20	509.450	-70.0	(509.200)	
22	518.650	-70.0	(518.400)	
23	529.150	-69.0	(529.000)	
23	528.100	-68.0	(528.400)	↓

The frequencies are classified by detection zone (green, yellow and red) and moreover, they are classified according to the level of the samplings and then by frequency value. So EazyRF suggests you the best frequencies according to the sampling, the frequency 482.500 (-79.0 dbm, 482.400) is a better choice than the frequency 510.200 (-72.0 dbm, 509.900) for example.

The frequencies can be classified in ascending or descending order of samplings, or frequency values by clicking on the headers, an indicator illustrates the direction:



In addition, the frequency order follows the "Ascending / Descending" direction of the device.

This module is not an editor of the parameters of a device, it only allows you to drag and paste the available frequencies. To do this, make a selection with the left mouse button for a non-continuous selection (use Shift for an extended selection or Ctrl for a multiple selection), or drag the right mouse button for a continuous selection. Finally, to move the selection, use the left button:

No	Description	Freq	Sampling	Intermodulation
1		470.500	14	-79.0 (470.200)
2		471.000	14	-80.0 (471.100)
3		471.600	14	-82.0 (471.900)
4		472.300	14	-84.0 (472.100)
5		472.850	14	-67.0 (472.800)
6		473.500	14	-83.0 (473.300)
7		474.250	14	-82.0 (474.500)
8		475.100	14	-78.0 (474.800)

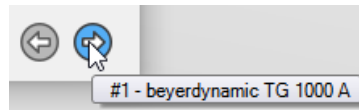
Avail Freq		Sampling		↑
8	494.550	-81.0	(494.500)	↑
8	486.650	-80.0	(486.400)	
8	499.350	-80.0	(499.100)	
23	525.150	-80.0	(524.900)	
23	526.050	-80.0	(525.800)	
22	520.650	-75.0	(520.400)	
22	521.200	-75.0	(520.900)	
22	521.850	-74.0	(521.700)	
18	498.500	-73.0	(498.500)	
22	523.450	-73.0	(523.200)	
18	497.850	-72.0	(497.700)	
22	519.350	-72.0	(519.300)	
22	518.850	-71.0	(518.600)	↓

Any modification can be canceled and redone using the "Undo / Redo" commands.

By positioning the mouse pointer over the list of available frequencies, the lower and upper spacing of the frequency from the document frequencies is displayed:

Avail Freq	Sampling
552.500	-100.4 (552.775)
552.950	-100.4 (552.775)
577.950	1.200 of 551.300 MHz - #1 - Shure AD4D G54 (Section 1 - Salon C)
608.400	1.700 of 554.200 MHz - #1 - Sennheiser EM3732-II A (Section 1 - Salon C)

The arrows at the bottom of the window allow you to move to the next or previous device:



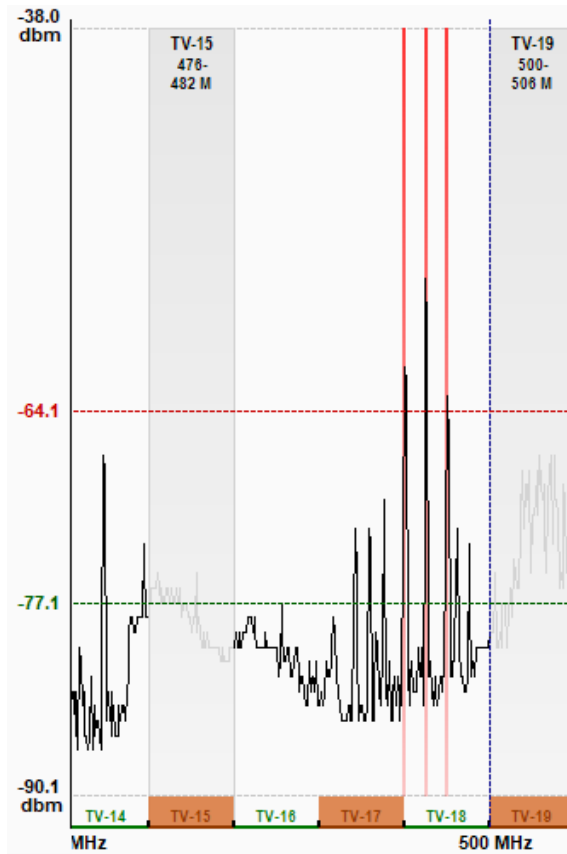
The "Sampling" option of the document parameters allows frequencies to be rejected automatically during calculations (see section 2.5.4):

Scans

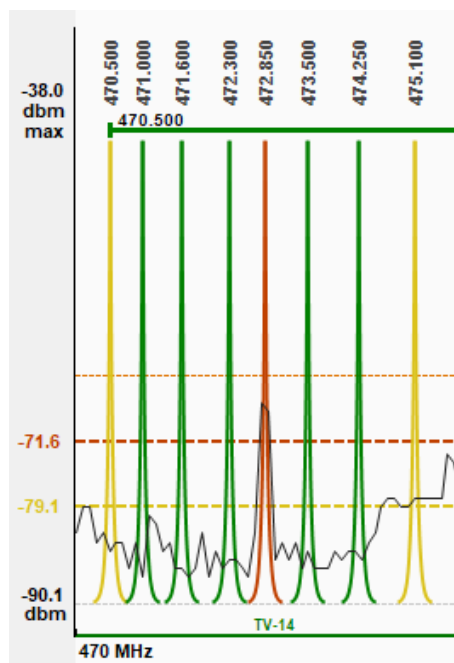
Reject Freq if level greater than (-50 à -89):  dbm

### 13.1.2 Device Scans - Threshold detection

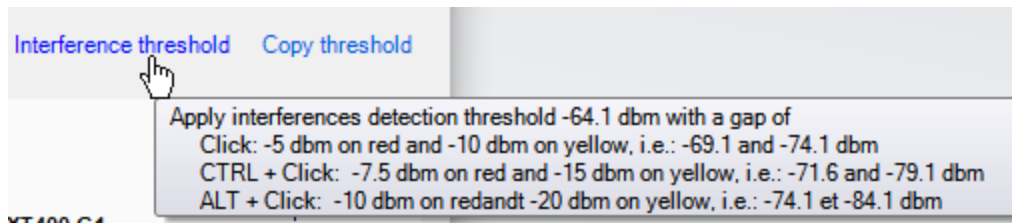
By default, EazyRF uses the interference detection threshold of the Sampling module:



In this example, the threshold is set to -64.1 dbm. EazyRF will use this value with an offset of -7.5 dbm for the red level and -15 dbm for the yellow level, i.e. -71.6 and -79.1 respectively when adding a device:

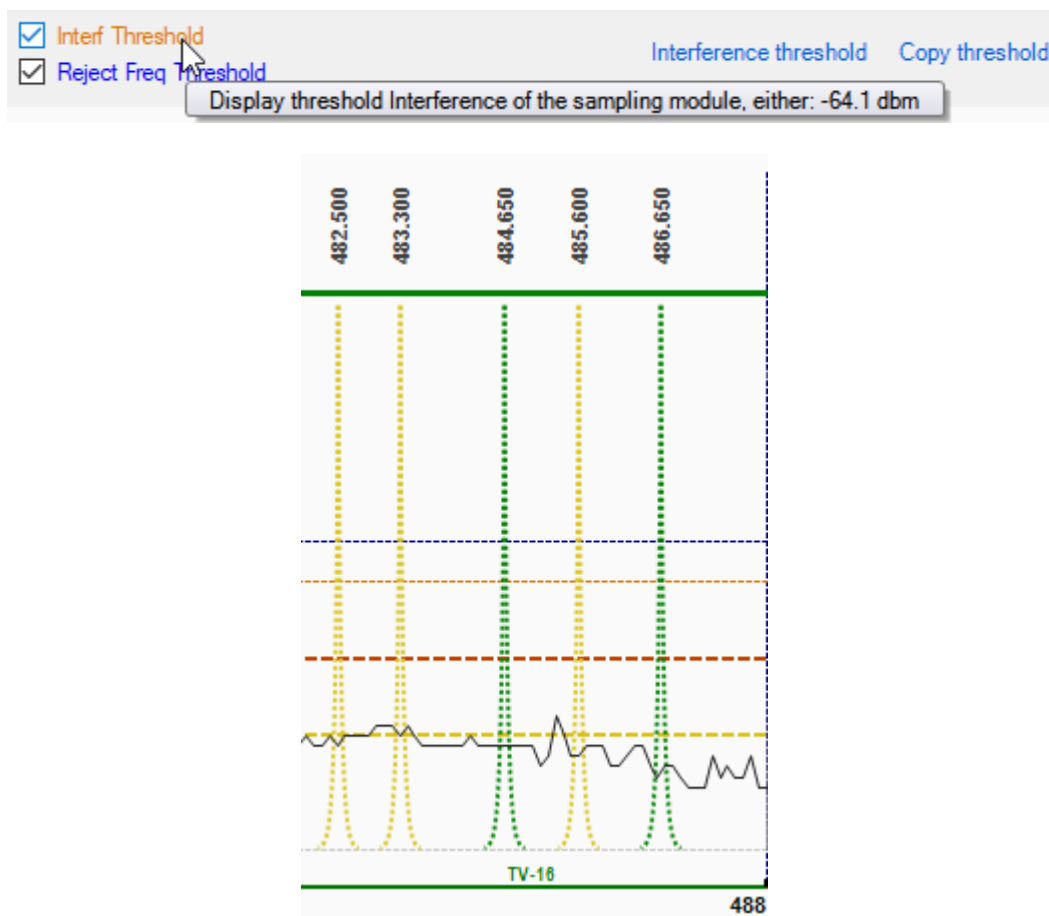


These values can be modified manually or directly with the command:

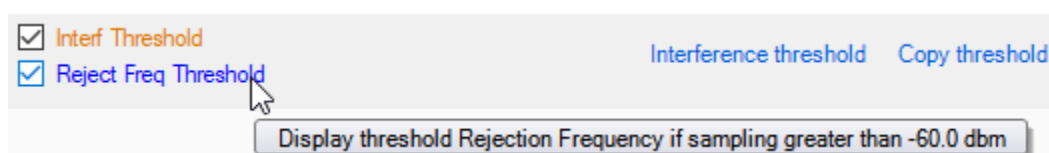


Thus, by using the Ctrl, Alt or none keys, a different correction can be assigned from the level of interference detection.

The threshold of the interference level or that of the rejection frequencies can be displayed with these commands:

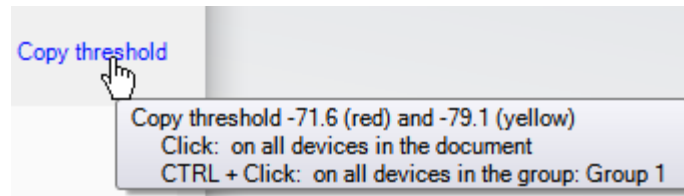


The orange threshold represents the level of interference and the blue that of the automatic frequency rejection (if activated).



See section 2.5.4 for more information on the rejection of frequencies according to sampling.

Finally, the red and yellow threshold values can be copied to all devices in the document or in a group:



## 14 - Client report

This module is used to create a report for delivery to a customer. The report can be created in pdf or printed directly.

Here is an example of a report:

Logo

Address

Email  
Phone

Frequencies Coordination			
Version: Test guide 4.80 260407-1200			
Event: The big show			
Client: NW			
City: Montreal			
Date: 04/11/26			
Contact: Roger Rog			
Phone: 123-456-7890			
Email: lui@me.com			

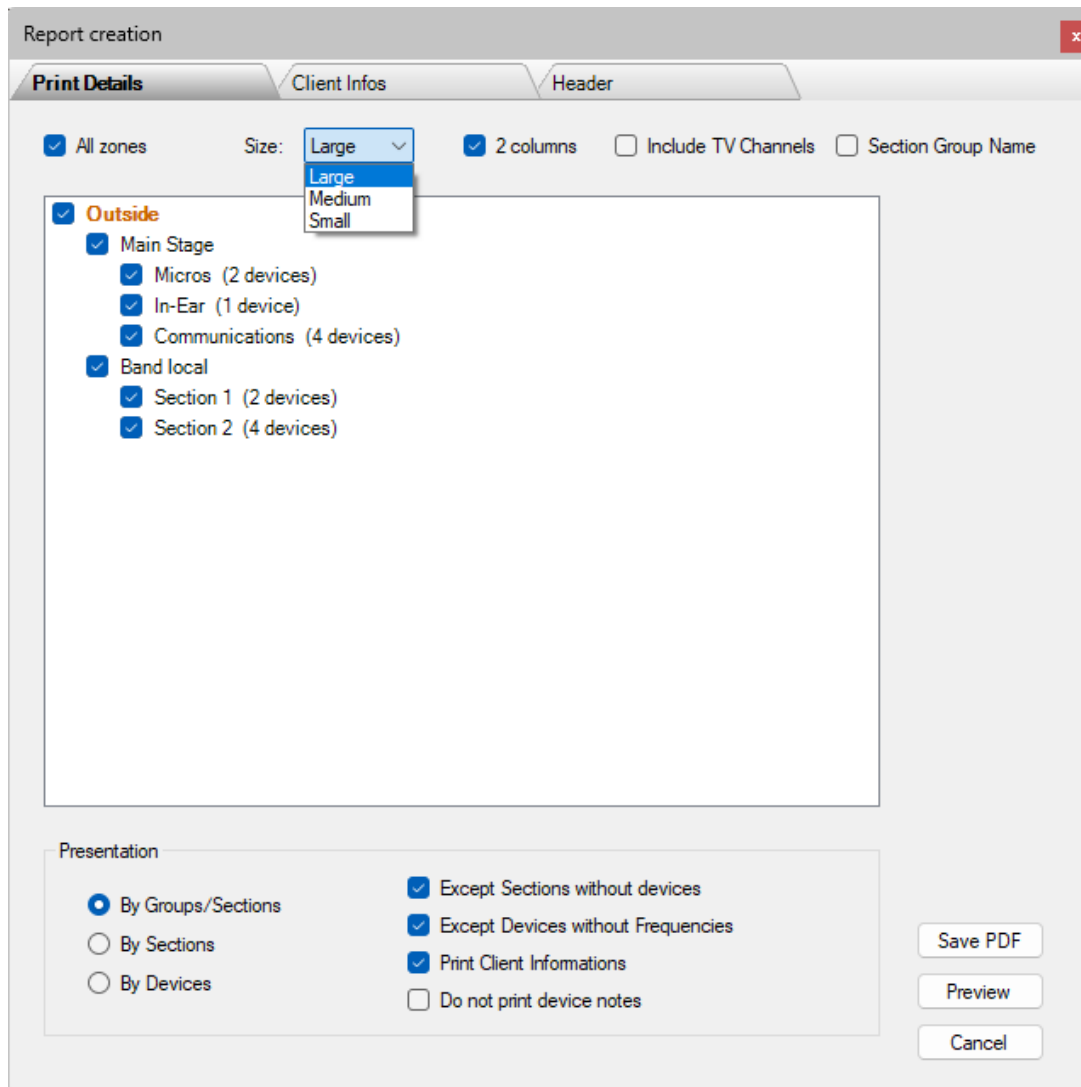
Outside			
Main Stage			
Micros			
#1 - beyerdynamic TG 1000 A			
	584.750	585.850	
	586.850	587.400	
	588.100	588.600	
	589.450	590.600	
#1 - beyerdynamic TG 1000 B			
	552.500	553.000	
	553.650	554.200	
In-Ear			
#1 - Shure PSM 1000 G11			
	527.800	528.900	

To create this report, use the command:



This command is available only in "Global" and "Detailed" views.

### 14.1 Print Details



The tool has three panes that allow you to define the elements to be printed, the client information's, and the customized creation of the report header.

In the "Print Details" pane, you can select each group or section separately, the "All Groups" option selects all groups and sections.

The size makes it possible to reduce the height of the lines of the document and the "2 columns" option, to place two frequencies per line. The "Section Group Name" option allows you to display the name of the group following the name of the section.

In the "Presentation" section, the "By Groups / Sections" option displays device data by section with the group name, while "By Sections" displays the section name only. The "By Devices" option displays data per device separately without the section and group name.

Sections without devices may not be displayed with "Except Sections without devices", while the option "Except Devices without Frequencies" does not display devices with no allocated frequency.

The option "Print Client Informations" allows to display the data relating to a client, data entered in the "Client Infos" pane in next section.

The "Do not print device notes" option is used not to print notes added to devices, even if they are marked as printable.

The "Preview" button displays the report before printing.

The "Save PDF" button allows to save the report in a PDF file. This file is locked and can't be edited by anyone.

## 14.2 Client Informations

The screenshot shows a software interface with three tabs: "Print Details", "Client Infos", and "Header". The "Client Infos" tab is active, displaying a form titled "Frequencies Coordination". The form contains the following fields:

- Version:** Test guide 4.80 260407-1200
- Event:** The big show
- Client:** NW
- City:** Montreal
- Date:** 04/11/26
- Contact:** Roger Rog
- Phone:** 123-456-7890
- Email:** lui@me.com

At the bottom of the form, there is a checked checkbox labeled "Do not print undefined information".

This pane allows you to define the data for a client and for an event. The title data (in bold) is also editable, it is global to all documents, while personal data is relative to the current document only.

The option "Do not print undefined information" is used to cancel the printing of an undefined data line (right part).

## 14.3 Header

Report creation

Print Details Client Infos **Header**

Left part

Logo

Set...

LogoEz.png

Image - Maximum: Height 80, Width: 250 pixels

Middle part

Address

Right part

Email  
Phone

On all pages

Save PDF

Preview

Cancel

The document header has three parts, the left, center, and right.

In the left part, an image can be added (company logo). The "Set" button allows you to select an image. The image is copied to the EazyRF installation directory. The maximum size displayed (and not the base image) is 80 pixels for height and 250 for width (proportion retained).

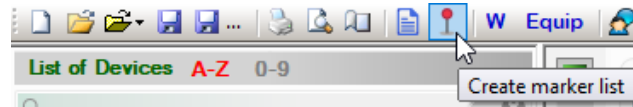
The central part is used to define the address of your company.

The right part is intended to display the contact data of your company.

The "On all pages" option prints this header on all pages of the document or only on the first page (the name to which the EazyRF license was granted appears on the subsequent pages at that time).

## 15 - Markers list

It is allowed to use the colors assigned to the zones, groups, sections and devices of the document to create a list of markers.



EazyRF uses two coloring systems, the one in the “Frequencies Plan” view is independent and appears only in this view.

Additionally, it is now possible to select each zone, group, section or device:

Markers for scanners x

All zones

**Zone 1**

Group 1

Section 1

- #1 - Sennheiser EM9046 A2 8 Freq (494.500 - 498.700) ■
- #1 - Sennheiser EM3732-II B 4 Freq (524.950 - 531.100) ■
- #1 - Shure AD4Q G55 8 Freq (470.125 - 474.425)

Section 2

- #1 - Sennheiser Evolution G2 Grp A IEM 8 Freq (518.500 - 523.900) ■
- #1 - Shure PSM 1000 J8A 6 Freq (554.000 - 558.150) ■

Group 2

Section 1

- #1 - Wisycom MRK980 UHF 8 Freq (531.950 - 578.500) ■

Section 2

- #1 - WisyCom N IEM 2 Freq (482.700 - 483.000) ■

44 Markers

470.125	■
470.525	■
471.025	■
471.675	■
472.125	■
472.675	■
473.375	■
474.425	■
482.700	■
483.000	■
494.500	■
495.100	■
495.700	■
496.300	■
496.900	■
497.500	■
498.100	■
498.700	■
518.500	■
518.950	■
519.500	■
520.200	■

Presentation

Show devices on unselected Groups/Sections

Use Group/Section colors if not defined on devices

Do not display Groups/Sections without frequency

Texte Marqueur: Fréquence plus

Device     Section     Group     Zone

The color of each group, section or device is indicated by a colored line below the name:

#1 - Sennheiser EM9046 A2 8 Freq (494.500 - 498.700) ■

The color block at the end of the name represents the corresponding color in a 16-color system such as WinRadio.

If a device does not have a defined color, an option allows you to use the color of the section if defined, otherwise that of the group:

Use Group/Section colors if not defined on devices

If no color is defined, red is selected by default and is indicated by a line instead of a block:

44 Markers	
472.125	-
472.675	-
473.375	-
474.425	-
482.700	■
483.000	■
494.500	■
495.100	■
495.700	■
496.300	■

Select the text you want to use for the frequency description:

Marker text: Frequency more

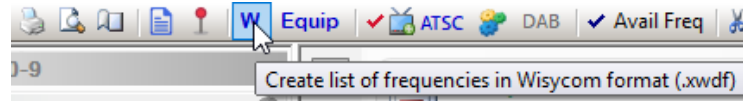
Device     Section     Group     Zone

You can save the list as a .csv file in WinRadio, Shure WWB7 or Aaronia format.

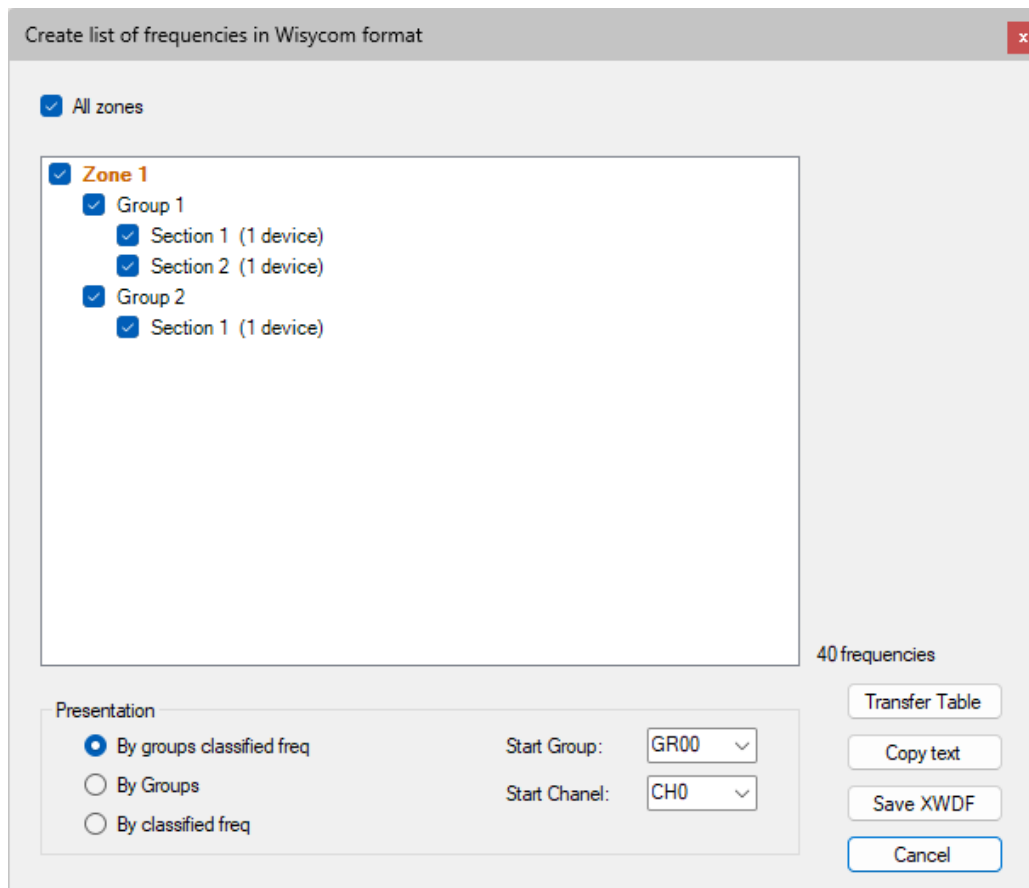
## 16 - Wisycom frequency list

This option allows you to create frequency lists in Wisycom format, i.e. 450000 instead of 450.000 MHz.

The command:



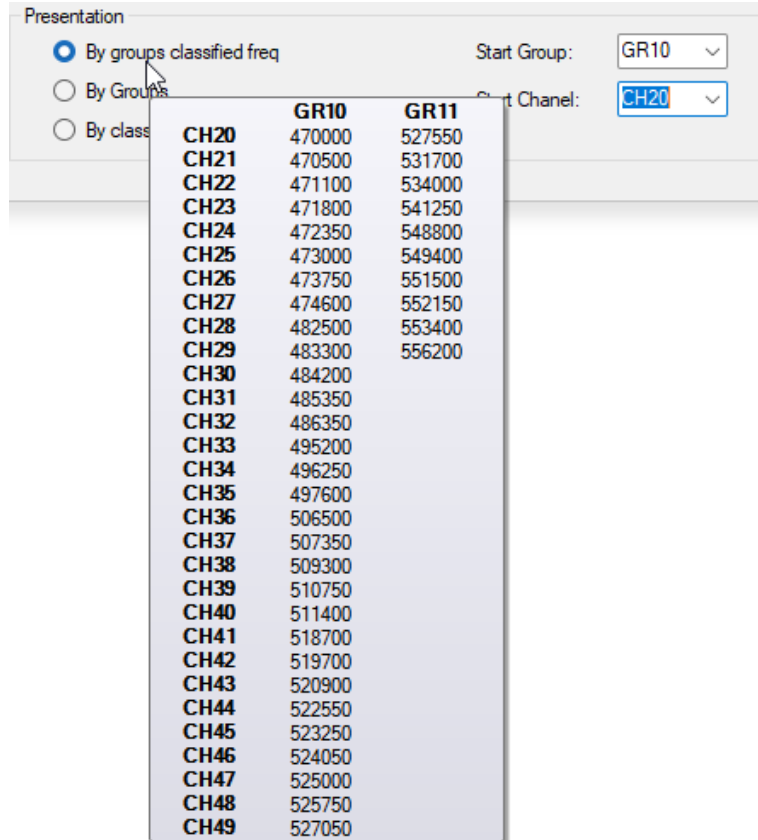
Call the editor:



Like the client reporting tool, group / section selection is allowed.

In the "Presentation" section, simply select the desired type of frequency classification, then select the destination cell for the Wisycom frequency editor.

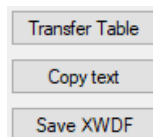
For the following selection:



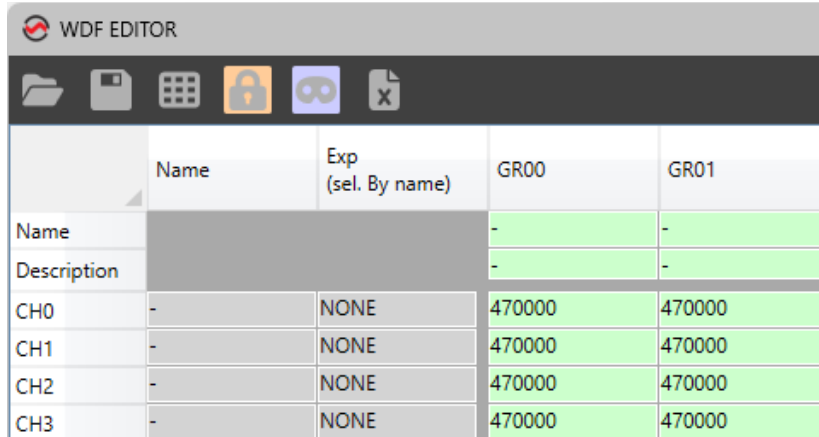
	GR10	GR11
CH20	470000	527550
CH21	470500	531700
CH22	471100	534000
CH23	471800	541250
CH24	472350	548800
CH25	473000	549400
CH26	473750	551500
CH27	474600	552150
CH28	482500	553400
CH29	483300	556200
CH30	484200	
CH31	485350	
CH32	486350	
CH33	495200	
CH34	496250	
CH35	497600	
CH36	506500	
CH37	507350	
CH38	509300	
CH39	510750	
CH40	511400	
CH41	518700	
CH42	519700	
CH43	520900	
CH44	522550	
CH45	523250	
CH46	524050	
CH47	525000	
CH48	525750	
CH49	527050	

The frequencies of each group are classified.

There are three ways to transfer data to the Wisycom Frequency Editor:



We can transfer the frequencies directly in the editor of Wisycom if no file is open, the reason is simple, EazyRF looks for the window with the title "WDF EDITOR":



The screenshot shows the WDF EDITOR application window. The title bar reads "WDF EDITOR". Below the title bar is a toolbar with icons for file operations (folder, document, grid, lock, padlock, close). The main area contains a table with the following data:

	Name	Exp (sel. By name)	GR00	GR01
Name			-	-
Description			-	-
CH0	-	NONE	470000	470000
CH1	-	NONE	470000	470000
CH2	-	NONE	470000	470000
CH3	-	NONE	470000	470000

Second option, via the clipboard. This makes it possible to paste the frequencies if a file is open (command Ctrl + V).

Finally, the last option is the creation of a file in .xwdf format, format recognized by Wisycom.

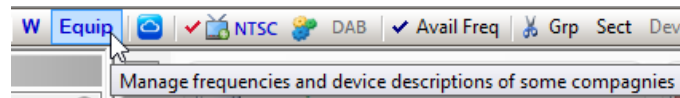
And we get the result:

WDF EDITOR

	Name	Exp (sel. By name)	GR09	GR10	GR11	GR12	GR13
Name			-	-	-	-	-
Description			-	-	-	-	-
CH18	-	NONE	470000	470000	470000	470000	470000
CH19	-	NONE	470000	470000	470000	470000	470000
CH20	-	NONE	470000	470000	527550	470000	470000
CH21	-	NONE	470000	470500	531700	470000	470000
CH22	-	NONE	470000	471100	534000	470000	470000
CH23	-	NONE	470000	471800	541250	470000	470000
CH24	-	NONE	470000	472350	548800	470000	470000
CH25	-	NONE	470000	473000	549400	470000	470000
CH26	-	NONE	470000	473750	551500	470000	470000
CH27	-	NONE	470000	474600	552150	470000	470000
CH28	-	NONE	470000	482500	553400	470000	470000
CH29	-	NONE	470000	483300	556200	470000	470000
CH30	-	NONE	470000	484200	470000	470000	470000
CH31	-	NONE	470000	485350	470000	470000	470000
CH32	-	NONE	470000	486350	470000	470000	470000
CH33	-	NONE	470000	495200	470000	470000	470000
CH34	-	NONE	470000	496250	470000	470000	470000
CH35	-	NONE	470000	497600	470000	470000	470000
CH36	-	NONE	470000	506500	470000	470000	470000
CH37	-	NONE	470000	507350	470000	470000	470000
CH38	-	NONE	470000	509300	470000	470000	470000
CH39	-	NONE	470000	510750	470000	470000	470000
CH40	-	NONE	470000	511400	470000	470000	470000
CH41	-	NONE	470000	518700	470000	470000	470000
CH42	-	NONE	470000	519700	470000	470000	470000
CH43	-	NONE	470000	520900	470000	470000	470000
CH44	-	NONE	470000	522550	470000	470000	470000
CH45	-	NONE	470000	523250	470000	470000	470000
CH46	-	NONE	470000	524050	470000	470000	470000
CH47	-	NONE	470000	525000	470000	470000	470000
CH48	-	NONE	470000	525750	470000	470000	470000
CH49	-	NONE	470000	527050	470000	470000	470000
CH50	-	NONE	470000	470000	470000	470000	470000
CH51	-	NONE	470000	470000	470000	470000	470000

## 17 - Sennheiser - Shure - Wisycom - Lectrosonics - beyerdynamic Equipment

The purpose of the "Equipment" module is to transfer the "Frequencies - Descriptions" values of EazyRF devices to Sennheiser, Shure, Wisycom and Lectrosonics branded equipment using the programming software for these devices; module called by the command:



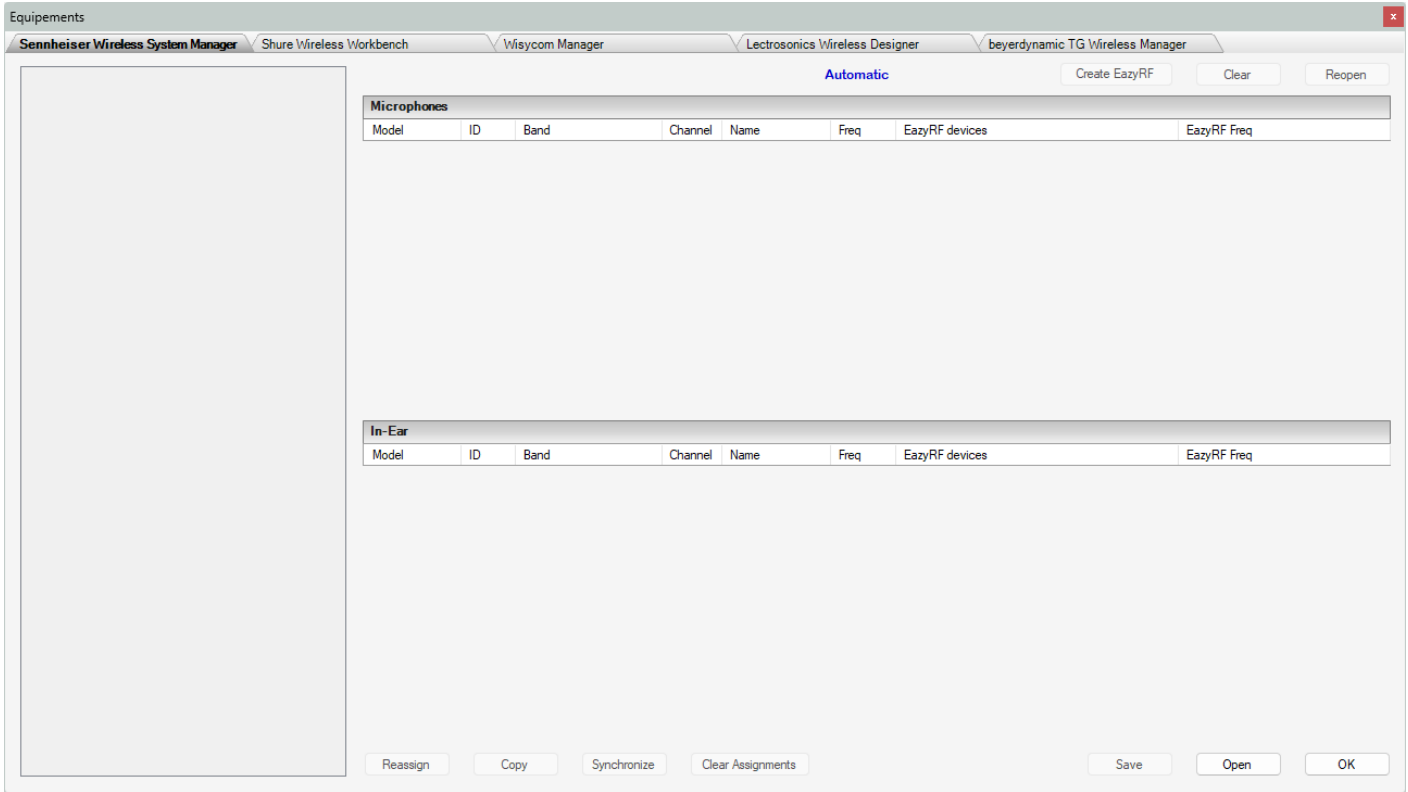
To get there, EazyRF reads the manufacturers' data files: .wsm for Sennheiser, .shw for Shure, .wshow for Wisycom and .wproj for Lectrosonis. The data of these files are in xml format, so readable (text format). EazyRF replaces the values of frequencies and descriptions of the data file by that of the devices used.

A correspondence must exist between the device names of the data document and the name used by EazyRF. This module makes it possible to link the devices of a Shure file, for example, with that of EazyRF.

Everything is done automatically according to some basic rules. The name of the manufacturer, the device model and the frequency bank must appear in the name of the EazyRF devices.

New lists of devices with the correct names are available on the EazyRF download site. You can use them or adapt your lists according to your choice.

The module is divided into four sections: Sennheiser, Shure, Wisycom and Lectrosonics, and work similarly:



## 17.1 Sennheiser Equipment

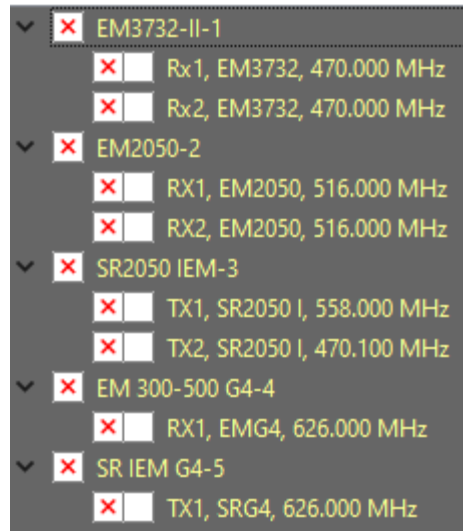
Let's start from a simple example with this need:

<b>Group 1</b>		
<b>Section 1</b>		
<b>#1 - Sennheiser EM2050 Aw</b>		
Mary	518.500	22
Peter	519.000	22
<b>#1 - Sennheiser EM 300-500 G4 Bw</b>		
Jason	626.000	39
<b>#1 - Sennheiser EM3732-II L</b>		
Vox 1	548.500	27
Vox 2	548.900	27
<b>Section 2</b>		
<b>#1 - Sennheiser SR2050 IEM Gw</b>		
Mary	558.000	28
Peter	558.450	28
<b>#1 - Sennheiser SR IEM G4 B</b>		
Jason	626.450	40

So we need three receivers and two transmitters, all Sennheiser type.

We need to create the Sennheiser configuration file, either online or offline. If the file is created offline, it will need to be paired with the devices later. It's easier to work online though.

So let's prepare the equipment in the Sennheiser - Wireless System Manager software, which gives:



Let's leave the frequencies at the default values. The goal is to modify them with EazyRF.

Let's open the file from the EazyRF Equipment module:

The screenshot shows the EazyRF software interface with the following components:

- Left Panel (Equipment List):**
  - Group 1**
    - Section 1**
      - #1 - Sennheiser EM2050 Aw
        - 518.500 - Mary
        - 519.000 - Peter
      - #1 - Sennheiser EM 300-500 G4 Bw
        - 626.000 - Jason
      - #1 - Sennheiser EM3732-II L
        - 548.500 - Vox 1
        - 548.900 - Vox 2
    - Section 2**
      - #1 - Sennheiser SR2050 IEM Gw
        - 558.000 - Mary
        - 558.450 - Peter
      - #1 - Sennheiser SR IEM G4 B
        - 626.450 - Jason
- Main Panel (Tables):**
  - Microphones (5):**

Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
EM2050	2	Aw (516.000 - 558.000)	Ch 1	EM2050	516.000	#1 - Sennheiser EM2050 Aw	518.500 - Mary
EM2050	2	Aw (516.000 - 558.000)	Ch 2	EM2050	516.000		519.000 - Peter
EM300-500G4	4	Bw (626.000 - 698.000)	Ch 1	EMG4	626.000	#1 - Sennheiser EM 300-500 G4 Bw	626.000 - Jason
EM3732	1	L (470.000 - 638.000)	Ch 1	EM3732	470.000	#1 - Sennheiser EM3732-II L	548.500 - Vox 1
EM3732	1	L (470.000 - 638.000)	Ch 2	EM3732	470.000		548.900 - Vox 2
  - In Ear (3):**

Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
SR2050 IEM	3	Gw (558.000 - 626.000)	Ch 1	SR2050 I	558.000	#1 - Sennheiser SR2050 IEM Gw	558.000 - Mary
SR2050 IEM	3	Gw (558.000 - 626.000)	Ch 2	SR2050 I	558.000		558.450 - Peter
SRG4	5	B (626.000 - 668.000)	Ch 1	SRG4	626.000	#1 - Sennheiser SR IEM G4 B	626.450 - Jason

Let's take a closer look at the information. The left part displays the list of Sennheiser equipment that is part of the document:

This image is a close-up of the equipment list from the screenshot, showing the following structure:

- Group 1**
  - Section 1**
    - #1 - Sennheiser EM2050 Aw
      - 518.500 - Mary
      - 519.000 - Peter
    - #1 - Sennheiser EM 300-500 G4 Bw
      - 626.000 - Jason
    - #1 - Sennheiser EM3732-II L
      - 548.500 - Vox 1
      - 548.900 - Vox 2
  - Section 2**
    - #1 - Sennheiser SR2050 IEM Gw
      - 558.000 - Mary
      - 558.450 - Peter
    - #1 - Sennheiser SR IEM G4 B
      - 626.450 - Jason

The frequencies in blue means that they are affected.

The upper right shows the "Microphones" section, the receivers:

Microphones (5)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
EM2050	2	Aw (516.000 - 558.000)	Ch 1	EM2050	516.000	#1 - Sennheiser EM2050 Aw	518.500 - Mary
EM2050	2	Aw (516.000 - 558.000)	Ch 2	EM2050	516.000		519.000 - Peter
EM300-500G4	4	Bw (626.000 - 698.000)	Ch 1	EMG4	626.000	#1 - Sennheiser EM 300-500 G4 Bw	626.000 - Jason
EM3732	1	L (470.000 - 638.000)	Ch 1	EM3732	470.000	#1 - Sennheiser EM3732-II L	548.500 - Vox 1
EM3732	1	L (470.000 - 638.000)	Ch 2	EM3732	470.000		548.900 - Vox 2

The bottom right shows the list of In-Ear, the transmitters:

In Ear (3)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
SR2050 IEM	3	Gw (558.000 - 626.000)	Ch 1	SR2050 I	558.000	#1 - Sennheiser SR2050 IEM Gw	558.000 - Mary
SR2050 IEM	3	Gw (558.000 - 626.000)	Ch 2	SR2050 I	558.000		558.450 - Peter
SRG4	5	B (626.000 - 668.000)	Ch 1	SRG4	626.000	#1 - Sennheiser SR IEM G4 B	626.450 - Jason

Everything happened automatically because there is correspondence between the device names:

Model	ID	Band	EazyRF devices
EM2050	2	Aw (516.000 - 558.000)	#1 - Sennheiser EM2050 Aw
EM2050	2	Aw (516.000 - 558.000)	
EM300-500G4	4	Bw (626.000 - 698.000)	#1 - Sennheiser EM 300-500 G4 Bw
EM3732	1	L (470.000 - 638.000)	#1 - Sennheiser EM3732-II L
EM3732	1	L (470.000 - 638.000)	

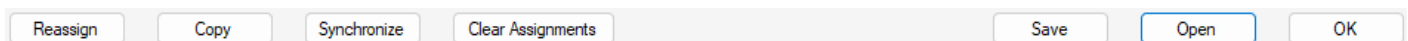
  

Model	ID	Band	EazyRF devices
SR2050 IEM	3	Gw (558.000 - 626.000)	#1 - Sennheiser SR2050 IEM Gw
SR2050 IEM	3	Gw (558.000 - 626.000)	
SRG4	5	B (626.000 - 668.000)	#1 - Sennheiser SR IEM G4 B

The middle section is red because the name and the frequency do not correspond to the values of the EazyRF document, when they are identical, they are displayed in black.

The frequencies and their descriptions are not automatically copied to the data in the Sennheiser file to not overwrite them systematically.

The commands at the bottom of the module allow you to do this:

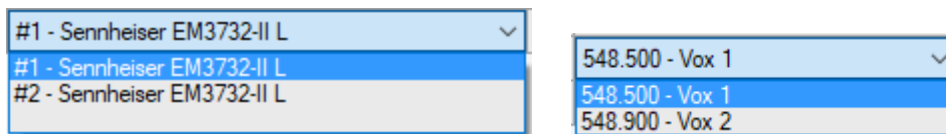


The "Copy" command transfers the frequencies and their descriptions to the Sennheiser data section:

Microphones (5)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
EM2050	2	Aw (516.000 - 558.000)	Ch 1	Mary	518.500	#1 - Sennheiser EM2050 Aw	518.500 - Mary
EM2050	2	Aw (516.000 - 558.000)	Ch 2	Peter	519.000		519.000 - Peter
EM300-500G4	4	Bw (626.000 - 698.000)	Ch 1	Jason	626.000	#1 - Sennheiser EM 300-500 G4 Bw	626.000 - Jason
EM3732	1	L (470.000 - 638.000)	Ch 1	Vox 1	548.500	#1 - Sennheiser EM3732-II L	548.500 - Vox 1
EM3732	1	L (470.000 - 638.000)	Ch 2	Vox 2	548.900		548.900 - Vox 2

In Ear (3)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
SR2050 IEM	3	Gw (558.000 - 626.000)	Ch 1	Mary	558.000	#1 - Sennheiser SR2050 IEM Gw	558.000 - Mary
SR2050 IEM	3	Gw (558.000 - 626.000)	Ch 2	Peter	558.450		558.450 - Peter
SRG4	5	B (626.000 - 668.000)	Ch 1	Jason	626.450	#1 - Sennheiser SR IEM G4 B	626.450 - Jason

The assignment of devices and frequencies can be done manually if desired:



The mode of allocation of the matching EazyRF-Manufacturer devices is indicated in the upper part of the module:

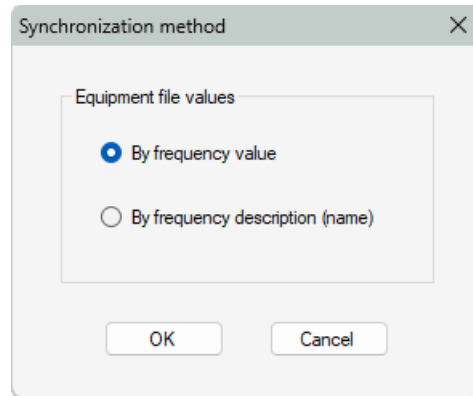


The allocation of frequencies and descriptions must absolutely be saved in the manufacturer's data file, under another name preferably, if not at the reopening of the EazyRF file, the assignment will not have followed. EazyRF does not save any data from the manufacturer file.

To clear a device from the assignment, select the last choice in the list, an empty line. To clear all assignments, use the "Clear Assignments" command.

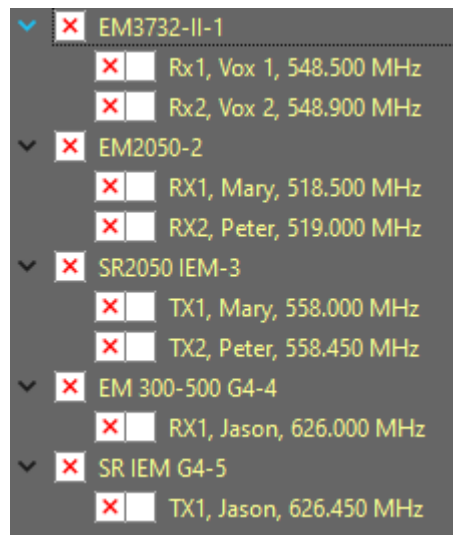
The "Reassign" command allows you to redo an assignment automatically. The assignment order of devices of the same type, EM3732 for example, follows the order of appearance in a section. If you want to assign specific frequencies to a device, move a device to a section and "Reassign".

The "Synchronize" command automatically finds the value of the Sennheiser frequency in the EazyRF list or the frequency description. You can select the option with this screen:



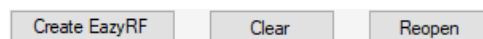
This pairing becomes necessary when the order of the Sennheiser devices is changed by "Wireless System Manager".

After doing the desired assignment, simply save the data to a Sennheiser file with the "Save" command and then open the new file in Sennheiser WSM:



What gives the expected result, the frequencies and their descriptions are assigned to the right devices and sent to the right equipment.

The upper right contains 3 other commands:



The "Reopen" command is used to open the data file again, if modified, for example.

"Delete" deletes all data and assignment.

Finally, "Create EazyRF" allows you to create EazyRF devices from the data file, if needed.

## 17.2 Shure Equipment

The procedure is identical as that used in Section 17.1 with the Sennheiser, in summary:

Need:

<b>Group 2</b>		
<b>Section 1</b>		
<b>#1 - Shure AXT400 J5</b>		
Annick	578.050	32
Lora	578.550	32
<b>#1 - Shure ULXD4D L50</b>		
Mark	632.000	40
Jim	632.500	41
<b>#1 - Shure AD4Q K55</b>		
Jojo	606.150	36
Tom	606.550	36
Brit	607.100	36
Judy	614.500	38
<b>Section 2</b>		
<b>#1 - Shure PSM 1000 G11</b>		
Jojo	482.500	16
Tom	483.000	16
<b>#1 - Shure PSM 1000 J8A</b>		
Brit	554.000	27
Judy	554.550	28

Shure configuration file (.shw):

Model	Channel Name	Device ID	Band	G & Ch	Frequency	Zone
<b>Microphone (8)</b>						
AD4D-B	Shure	[AD4D-B]	K55	G:- Ch:-	Find Best	Default
AD4D-B	Shure	[AD4D-B]	K55	G:- Ch:-	Find Best	Default
AD4D-B	Shure	[AD4D-B]	K55	G:- Ch:-	Find Best	Default
AD4D-B	Shure	[AD4D-B]	K55	G:- Ch:-	Find Best	Default
AXT400 A	Shure	[AXT400A]	J5	G:- Ch:-	Find Best	Default
AXT400 A	Shure	[AXT400A]	J5	G:- Ch:-	Find Best	Default
ULXD4D	Shure	[ULXD4D]	L50	G:- Ch:-	Find Best	Default
ULXD4D	Shure	[ULXD4D]	L50	G:- Ch:-	Find Best	Default
<b>In Ear Monitor (4)</b>						
PSM1000	Shure	[P10T]	J8A	G:- Ch:-	Find Best	Default
PSM1000	Shure	[P10T]	J8A	G:- Ch:-	Find Best	Default
PSM1000	Shure	[P10T]	G11	G:- Ch:-	Find Best	Default
PSM1000	Shure	[P10T]	G11	G:- Ch:-	Find Best	Default

Loading .shw file into Equipment module - Shure:

Microphones (8)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
AD4D-B	AD4D-B 1	K55 (606.125 - 693.875)	Ch 1	Shure		#1 - Shure AD4Q K55	606.150 - Jojo
AD4D-B	AD4D-B 1	K55 (606.125 - 693.875)	Ch 2	Shure			606.550 - Tom
AD4D-B	AD4D-B 2	K55 (606.125 - 693.875)	Ch 1	Shure		#1 - Shure AD4Q K55	607.100 - Brit
AD4D-B	AD4D-B 2	K55 (606.125 - 693.875)	Ch 2	Shure			614.500 - Judy
AXT400 A	AXT400A	J5 (578.000 - 638.000)	Ch 1	Shure		#1 - Shure AXT400 J5	578.050 - Annick
AXT400 A	AXT400A	J5 (578.000 - 638.000)	Ch 2	Shure			578.550 - Lora
ULXD4D	ULXD4D 1	L50 (632.000 - 696.000)	Ch 1	Shure		#1 - Shure ULXD4D L50	632.000 - Mark
ULXD4D	ULXD4D 1	L50 (632.000 - 696.000)	Ch 2	Shure			632.500 - Jim

In Ear (4)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
PSM1000	P10T	G11 (479.125 - 541.875)	Ch 1	Shure		#1 - Shure PSM 1000 G11	482.500 - Jojo
PSM1000	P10T	G11 (479.125 - 541.875)	Ch 2	Shure			483.000 - Tom
PSM1000	P10T	J8A (554.000 - 615.875)	Ch 1	Shure		#1 - Shure PSM 1000 J8A	554.000 - Brit
PSM1000	P10T	J8A (554.000 - 615.875)	Ch 2	Shure			554.550 - Judy

Device name correspondence:

Model ▲	ID	Band
AD4D-B	AD4D-B 1	K55 (606.125 - 693.875)
AD4D-B	AD4D-B 1	K55 (606.125 - 693.875)
AD4D-B	AD4D-B 2	K55 (606.125 - 693.875)
AD4D-B	AD4D-B 2	K55 (606.125 - 693.875)
AXT400 A	AXT400A	J5 (578.000 - 638.000)
AXT400 A	AXT400A	J5 (578.000 - 638.000)
ULXD4D	ULXD4D 1	L50 (632.000 - 696.000)
ULXD4D	ULXD4D 1	L50 (632.000 - 696.000)

EazyRF devices
#1 - Shure AD4Q K55
#1 - Shure AD4Q K55
#1 - Shure AXT400 J5
#1 - Shure ULXD4D L50

Model ▲	ID	Band
PSM1000	P10T	G11 (479.125 - 541.875)
PSM1000	P10T	G11 (479.125 - 541.875)
PSM1000	P10T	J8A (554.000 - 615.875)
PSM1000	P10T	J8A (554.000 - 615.875)

EazyRF devices
#1 - Shure PSM 1000 G11
#1 - Shure PSM 1000 J8A

Only the number of receivers vary between the AD4D (2) and AD4Q (4) models.

Copy data:

Microphones (8)								
Model ▲	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq	
AD4D-B	AD4D-B 1	K55 (606.125 - 693.875)	Ch 1	Jojo	606.150	#1 - Shure AD4Q K55	606.150 - Jojo	
AD4D-B	AD4D-B 1	K55 (606.125 - 693.875)	Ch 2	Tom	606.550		606.550 - Tom	
AD4D-B	AD4D-B 2	K55 (606.125 - 693.875)	Ch 1	Brit	607.100	#1 - Shure AD4Q K55	607.100 - Brit	
AD4D-B	AD4D-B 2	K55 (606.125 - 693.875)	Ch 2	Judy	614.500		614.500 - Judy	
AXT400 A	AXT400A	J5 (578.000 - 638.000)	Ch 1	Annick	578.050	#1 - Shure AXT400 J5	578.050 - Annick	
AXT400 A	AXT400A	J5 (578.000 - 638.000)	Ch 2	Lora	578.550		578.550 - Lora	
ULXD4D	ULXD4D 1	L50 (632.000 - 696.000)	Ch 1	Mark	632.000	#1 - Shure ULXD4D L50	632.000 - Mark	
ULXD4D	ULXD4D 1	L50 (632.000 - 696.000)	Ch 2	Jim	632.500		632.500 - Jim	

In Ear (4)								
Model ▲	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq	
PSM1000	P10T	G11 (479.125 - 541.875)	Ch 1	Jojo	482.500	#1 - Shure PSM 1000 G11	482.500 - Jojo	
PSM1000	P10T	G11 (479.125 - 541.875)	Ch 2	Tom	483.000		483.000 - Tom	
PSM1000	P10T	J8A (554.000 - 615.875)	Ch 1	Brit	554.000	#1 - Shure PSM 1000 J8A	554.000 - Brit	
PSM1000	P10T	J8A (554.000 - 615.875)	Ch 2	Judy	554.550		554.550 - Judy	

Save data in Shure .shw document, the result:

Model	Channel Name	Device ID	Band	G & Ch	Frequency
<b>Microphone (8)</b>					
AD4D-B	Brit	[AD4D-B]	K55	G:- Ch:-	607.100 MHz
AD4D-B	Judy	[AD4D-B]	K55	G:- Ch:-	614.500 MHz
AD4D-B	Jojo	[AD4D-B]	K55	G:- Ch:-	606.150 MHz
AD4D-B	Tom	[AD4D-B]	K55	G:- Ch:-	606.550 MHz
AXT400 A	Annick	[AXT400A]	J5	G:- Ch:-	578.050 MHz
AXT400 A	Lora	[AXT400A]	J5	G:- Ch:-	578.550 MHz
ULXD4D	Mark	[ULXD4D]	L50	G:- Ch:-	632.000 MHz
ULXD4D	Jim	[ULXD4D]	L50	G:- Ch:-	632.500 MHz
<b>In Ear Monitor (4)</b>					
PSM1000	Jojo	[P10T]	G11	G:- Ch:-	482.500 MHz
PSM1000	Tom	[P10T]	G11	G:- Ch:-	483.000 MHz
PSM1000	Brit	[P10T]	J8A	G:- Ch:-	554.000 MHz
PSM1000	Judy	[P10T]	J8A	G:- Ch:-	554.550 MHz

### 17.3 Wisycom Equipment

The procedure is identical as that used in Section 17.1 with the Sennheiser, in summary:

Need:

<b>Group 3</b>		
<b>Section 1</b>		
<b>#1 - Wisycom MRK960</b>		
Choir 1	549.650	27
Choir 2	550.300	27
Choir 3	551.350	27
Choir 4	555.500	28
Choir 5	566.500	30
Choir 6	567.600	30
Choir 7	569.500	30
Choir 8	570.300	30
<b>Section 2</b>		
<b>#1 - Wisycom MTK952</b>		
Choir 1	470.000	
Choir 4	470.600	14

Wisycom configuration file (.wshow):

N°	Model	Name	Freq MHz	Gr Ch	Link	Type	Serial
1	1 MRK960		470.000	CH01 GR00	192.168.10.121	RX1	V4000059
2	1 MRK960		470.000	CH02 GR00	192.168.10.121	RX2	V4000059
3	2 MRK960		470.000	CH01 GR00	192.168.10.122	RX1	V4000060
4	2 MRK960		470.000	CH02 GR00	192.168.10.122	RX2	V4000060
5	3 MRK960		470.000	CH01 GR00	192.168.10.123	RX1	V4000061
6	3 MRK960		470.000	CH02 GR00	192.168.10.123	RX2	V4000061
7	4 MRK960		470.000	CH01 GR00	192.168.10.124	RX1	W0900002
8	4 MRK960		470.000	CH02 GR00	192.168.10.124	RX2	W0900002
9	5 MTK952A		525.000	Gr 00 Ch 01	192.168.10.205	Tx1	W2400003
10	5 MTK952A		525.000	Gr 00 Ch 02	192.168.10.205	Tx2	W2400003

Loading .wshow file into devices module - Wisycom:

Microphones (8)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
MRK960	1	470.000 - 840.000	CH01 GR00		470.000	#1 - Wisycom MRK960	549.650 - Choir 1
MRK960	1	470.000 - 840.000	CH02 GR00		470.000		550.300 - Choir 2
MRK960	2	470.000 - 840.000	CH01 GR00		470.000	#1 - Wisycom MRK960	551.350 - Choir 3
MRK960	2	470.000 - 840.000	CH02 GR00		470.000		555.500 - Choir 4
MRK960	3	470.000 - 840.000	CH01 GR00		470.000	#1 - Wisycom MRK960	566.500 - Choir 5
MRK960	3	470.000 - 840.000	CH02 GR00		470.000		567.600 - Choir 6
MRK960	4	470.000 - 840.000	CH01 GR00		470.000	#1 - Wisycom MRK960	569.500 - Choir 7
MRK960	4	470.000 - 840.000	CH02 GR00		470.000		570.300 - Choir 8

In Ear (2)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
MTK952A	12	470.000 - 800.000	CH01 GR00		525.000	#1 - Wisycom MTK952	470.000 - Choir 1
MTK952A	12	470.000 - 800.000	CH02 GR00		525.000		470.600 - Choir 4

The matching of the equipment names is pretty obvious.

Copy data:

Microphones (8)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
MRK960	1	470.000 - 840.000	CH01 GR00	Choir 1	549.650	#1 - Wisycom MRK960	549.650 - Choir 1
MRK960	1	470.000 - 840.000	CH02 GR00	Choir 2	550.300		550.300 - Choir 2
MRK960	2	470.000 - 840.000	CH01 GR00	Choir 3	551.350	#1 - Wisycom MRK960	551.350 - Choir 3
MRK960	2	470.000 - 840.000	CH02 GR00	Choir 4	555.500		555.500 - Choir 4
MRK960	3	470.000 - 840.000	CH01 GR00	Choir 5	566.500	#1 - Wisycom MRK960	566.500 - Choir 5
MRK960	3	470.000 - 840.000	CH02 GR00	Choir 6	567.600		567.600 - Choir 6
MRK960	4	470.000 - 840.000	CH01 GR00	Choir 7	569.500	#1 - Wisycom MRK960	569.500 - Choir 7
MRK960	4	470.000 - 840.000	CH02 GR00	Choir 8	570.300		570.300 - Choir 8

In Ear (2)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
MTK952A	12	470.000 - 800.000	CH01 GR00	Choir 1	470.000	#1 - Wisycom MTK952	470.000 - Choir 1
MTK952A	12	470.000 - 800.000	CH02 GR00	Choir 4	470.600		470.600 - Choir 4

Save data in Wisycom document .wshow, the result:

N°	Model	Name	Freq MHz	Gr Ch	Link	Type	Serial
1	1 MRK960	Choir 1	549.650	CH01 GR00	192.168.10.121	RX1	V4000059
2	1 MRK960	Choir 2	550.300	CH02 GR00	192.168.10.121	RX2	V4000059
3	2 MRK960	Choir 3	551.350	CH01 GR00	192.168.10.122	RX1	V4000060
4	2 MRK960	Choir 4	555.500	CH02 GR00	192.168.10.122	RX2	V4000060
5	3 MRK960	Choir 5	566.500	CH01 GR00	192.168.10.123	RX1	V4000061
6	3 MRK960	Choir 6	567.600	CH02 GR00	192.168.10.123	RX2	V4000061
7	4 MRK960	Choir 7	569.500	CH01 GR00	192.168.10.124	RX1	W0900002
8	4 MRK960	Choir 8	570.300	CH02 GR00	192.168.10.124	RX2	W0900002
9	5 MTK952A	Choir 1	470.000	Gr 00 Ch 01	192.168.10.205	Tx1	W2400003
10	5 MTK952A	Choir 4	470.600	Gr 00 Ch 02	192.168.10.205	Tx2	W2400003

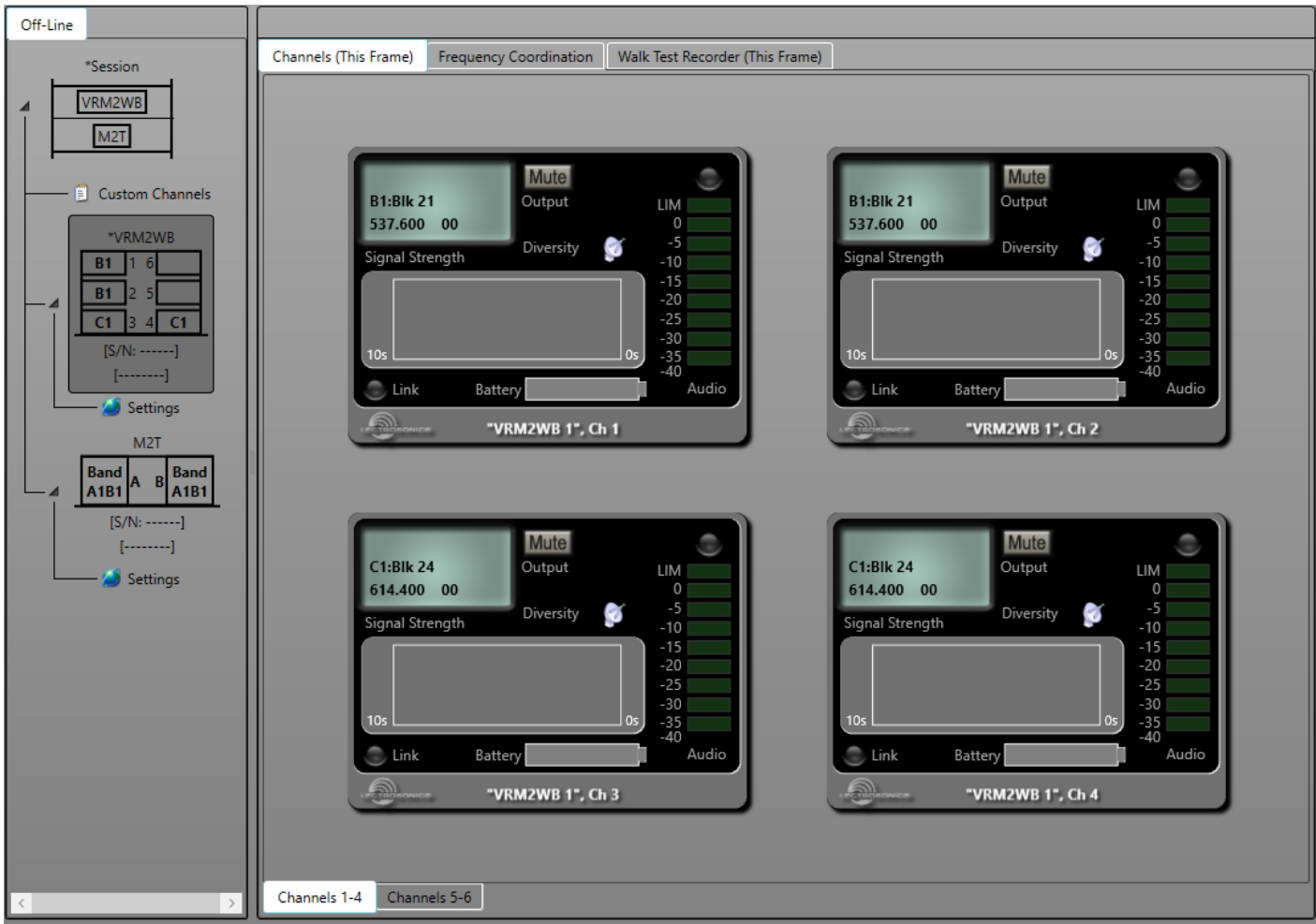
## 17.4 Lectrosonics Equipment

The procedure is identical as that used in Section 17.1 with the Sennheiser, in summary:

Need:

<b>Group 4</b>		
<b>Section 1</b>		
<b>#1 - Lectrosonics VRM2WB B1</b>		
Mary	540.200	25
Paul	541.050	25
<b>#1 - Lectrosonics VRM2WB C1</b>		
Kim	615.100	38
Jessy	615.800	38
<b>Section 2</b>		
<b>#1 - Lectrosonics M2T A1B1</b>		
Kim	506.500	20
Jessy	506.900	20

Lectrosonics configuration file (.wproj):



Loading .wproj file in Equipment module - Lectrosonics:

Microphones (4)							
Model	ID	Band	Ch	Name	Freq	EazyRF devices	EazyRF Freq
VRM2WB	1	B1 (537.600 - 614.375)	1		537.600	#1 - Lectrosonics VRM2WB B1	540.200 - Mary
VRM2WB	1	B1 (537.600 - 614.375)	2		537.600		541.050 - Paul
VRM2WB	1	C1 (614.400 - 691.175)	3		614.400	#1 - Lectrosonics VRM2WB C1	615.100 - Kim
VRM2WB	1	C1 (614.400 - 691.175)	4		614.400		615.800 - Jessy

In Ear (2)							
Model	ID	Band	Ch	Name	Freq	EazyRF devices	EazyRF Freq
M2T	1	A1B1 (470.100 - 614.375)	1		470.100	#1 - Lectrosonics M2T A1B1	506.500 - Kim
M2T	1	A1B1 (470.100 - 614.375)	2		470.100		506.900 - Jessy

The matching of the equipment names is pretty obvious.

Copy data:

Microphones (4)							
Model	ID	Band	Ch	Name	Freq	EazyRF devices	EazyRF Freq
VRM2WB	1	B1 (537.600 - 614.375)	1	Mary	540.200	#1 - Lectrosionics VRM2WB B1	540.200 - Mary
VRM2WB	1	B1 (537.600 - 614.375)	2	Paul	541.050		541.050 - Paul
VRM2WB	1	C1 (614.400 - 691.175)	3	Kim	615.100	#1 - Lectrosionics VRM2WB C1	615.100 - Kim
VRM2WB	1	C1 (614.400 - 691.175)	4	Jessy	615.800		615.800 - Jessy

In Ear (2)							
Model	ID	Band	Ch	Name	Freq	EazyRF devices	EazyRF Freq
M2T	1	A1B1 (470.100 - 614.375)	1	Kim	506.500	#1 - Lectrosionics M2T A1B1	506.500 - Kim
M2T	1	A1B1 (470.100 - 614.375)	2	Jessy	506.900		506.900 - Jessy

Save data in Lectrosionics .wproj document, the result:





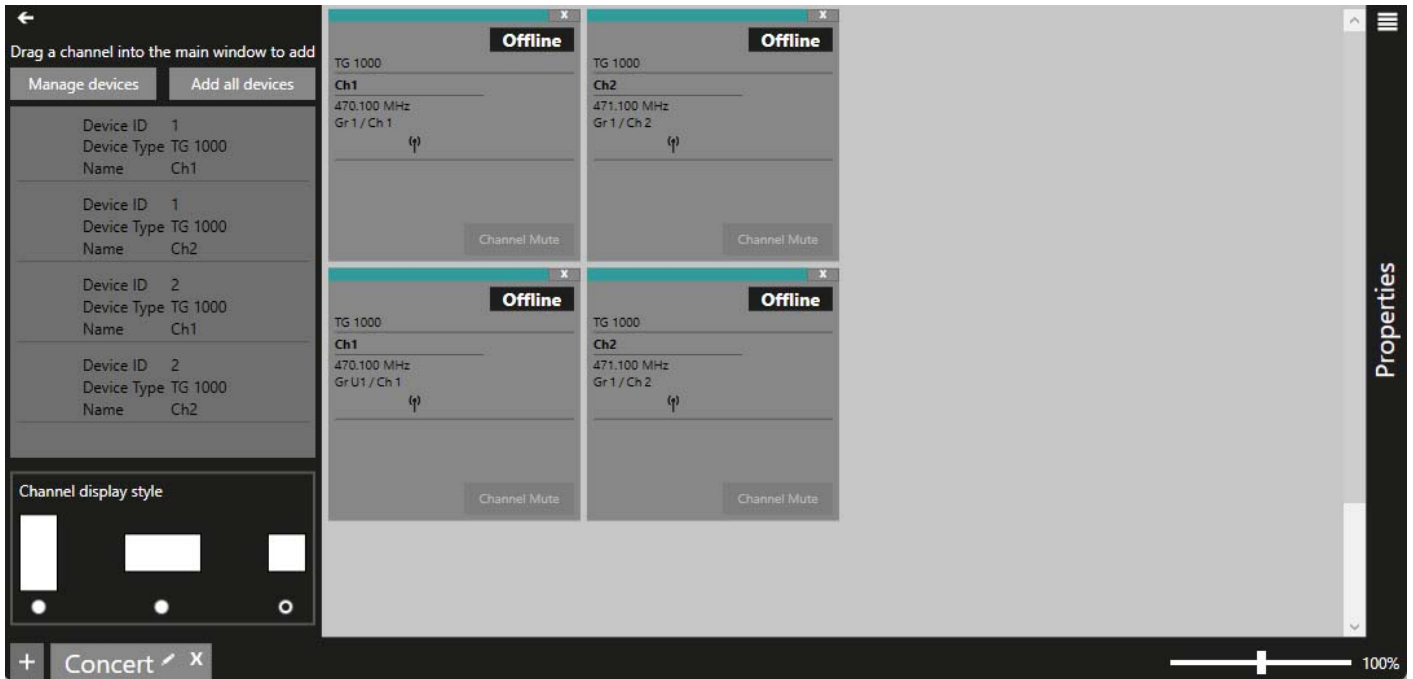
### 17.5 beyerdynamic equipment

The procedure is identical as that used in Section 17.1 with the Sennheiser, in summary:

Need:

<b>Group 1</b>			
<b>Section 1</b>			
<b>#1 - beyerdynamic TG 1000 A</b>			
Pierre	470.100	14	
Patsy	470.600	14	
<b>#2 - beyerdynamic TG 1000 A</b>			
Pascal	506.550	20	
Lucy	510.450	20	

beyerdynamic configuration file (.wcms):



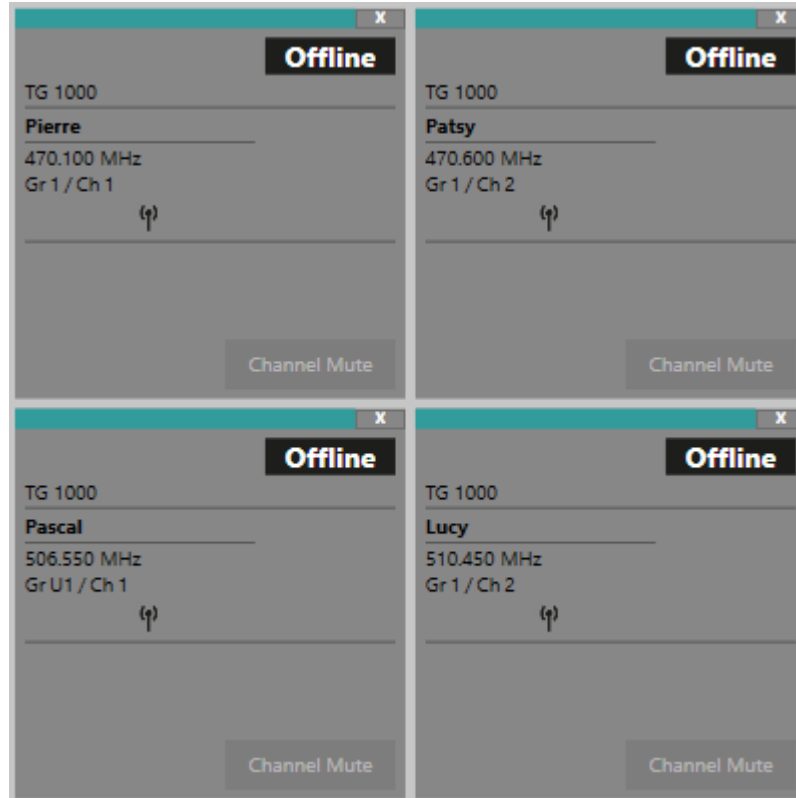
Loading .wcms file in Equipment module - Lectbeyerdynamicsonics:

Microphones (4)								
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq	
TG1000	1		Ch1	Ch1	470.100	#1 - beyerdynamic TG 1000 A	470.100 - Pierre	
TG1000	1		Ch2	Ch2	471.100		470.600 - Patsy	
TG1000	2		Ch1	Ch1	470.100	#2 - beyerdynamic TG 1000 A	506.550 - Pascal	
TG1000	2		Ch2	Ch2	471.100		510.450 - Lucy	

Copy data:

Microphones (4)								
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq	
TG1000	1		Ch1	Pierre	470.100	#1 - beyerdynamic TG 1000 A	470.100 - Pierre	
TG1000	1		Ch2	Patsy	470.600		470.600 - Patsy	
TG1000	2		Ch1	Pascal	506.550	#2 - beyerdynamic TG 1000 A	506.550 - Pascal	
TG1000	2		Ch2	Lucy	510.450		510.450 - Lucy	

Save data in beyerdynamic .wcms document, the result:



## 17.6 List Devices and Names

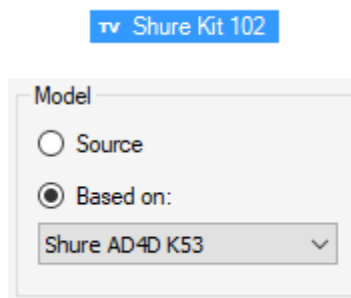
The correspondence between the names of EazyRF devices and Sennheiser, Shure, Wisycom and Lectrosonics equipment is essential for the proper functioning of this module.

A list of suitable names exists on the EazyRF download site:

<http://www.eazyrf.com/DownloadDevices2019.html>.

For updates on the device list, see section 10.5.

For a name to be recognized, the name of the manufacturer must be present, as well as the model of the device and the frequency band, for example Shure AD4D K53, or an evening device based on this name:



This device name is valid because it is a Shure AD4D K53 set.

Better still, you can download the new names, update the list of devices, then change only the model setting, in the device editor, from basic model to based.

You can also change the name of your device to include the necessary credentials, in which case the old name is retained, and when you open a document containing the old name, it is automatically changed to the new one. , a temporary message tells you.

It is also possible to add to the description of the device the missing elements, for example if # 1 - Shure Axient J5 is not recognized, AD4D # 1 - Shure Axient J5 will be recognized as Shure AD4D J5 because all identifiers are present.



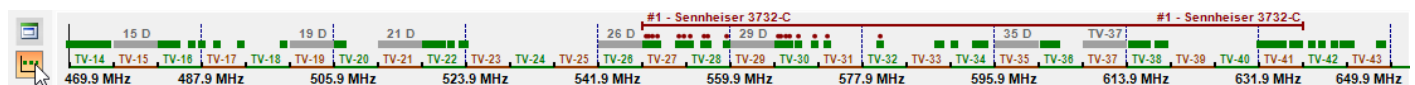
## 18 - Global View

The "Global View" is the visual representation of the document on devices not detailed form of frequencies, only the desired number of available frequencies and each device is displayed with some indicators.

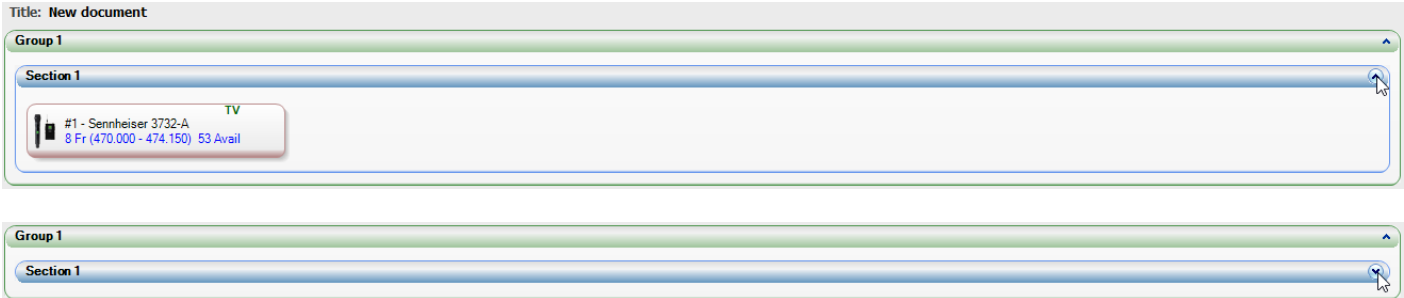
Group - Section - Device	Variables Freq Dev	No	Description	8 Freq	Intermodulation	66 Avail Freq	Options (Dev)
Group 1	Tolerance 2 TX   100	1		478.500 22		22 483.700	Protected
Section 1	Tolerance 3 TX   50	2		478.900 22		22 485.150	Priority
Dev Desc #1	Separation   400	3		479.400 22		22 502.550	Minimum Evaluation
Shure AD4Q G56	Image   None	4		480.000 22		22 503.300	Descending order
Wished Freq 8	Filter   32.00	5		480.450 22		22 504.250	<input checked="" type="checkbox"/> Avail Freq
Type Micros	Start   470.150	6		481.000 22		22 505.500	Auto Start
	Stop   636.000	7		481.650 22		22 507.300	
	Increment   0.025	8		483.000 22		22 508.150	

The command bar "Group / Section / Device / Evaluate", see section 18.8 for the command "Evaluate":

This bar can be changed to display the summary of the frequency spectrum:



Each Group and Section can be opened or closed by its upper right button:



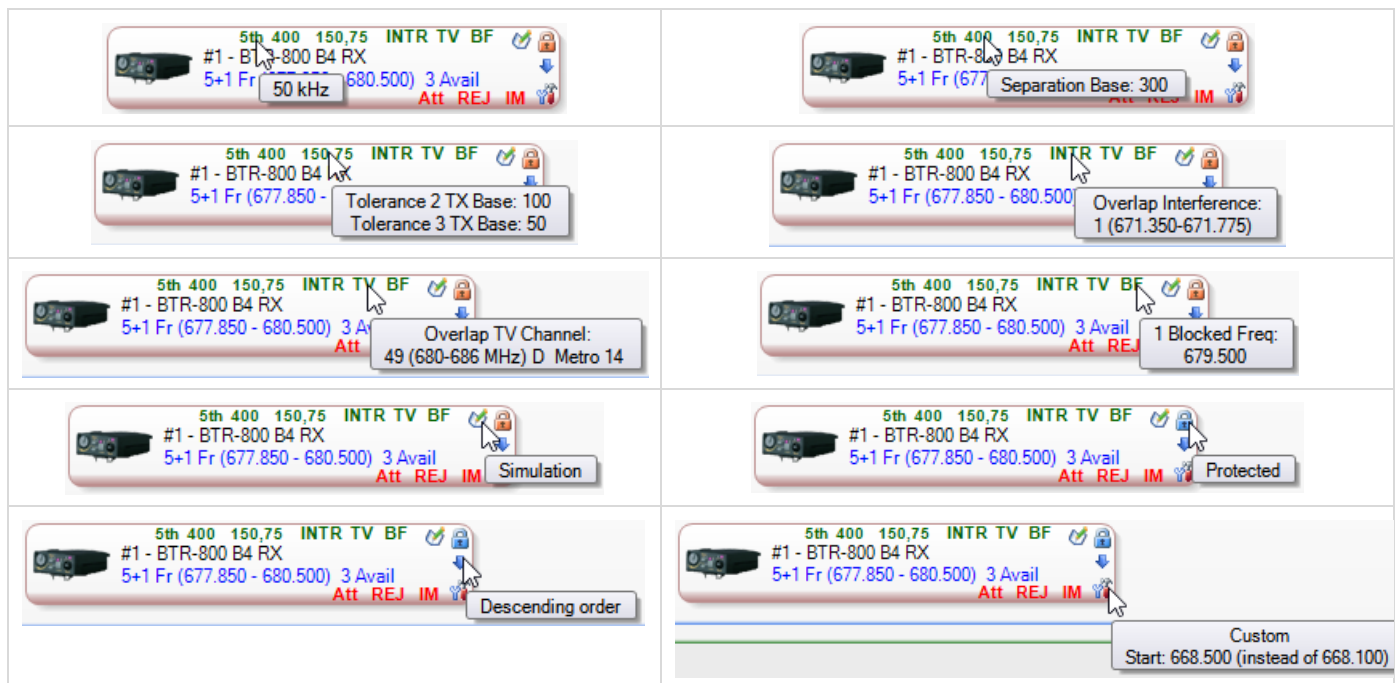
The section "Title" is used to identify the document, it is this title that is displayed in the header prints.

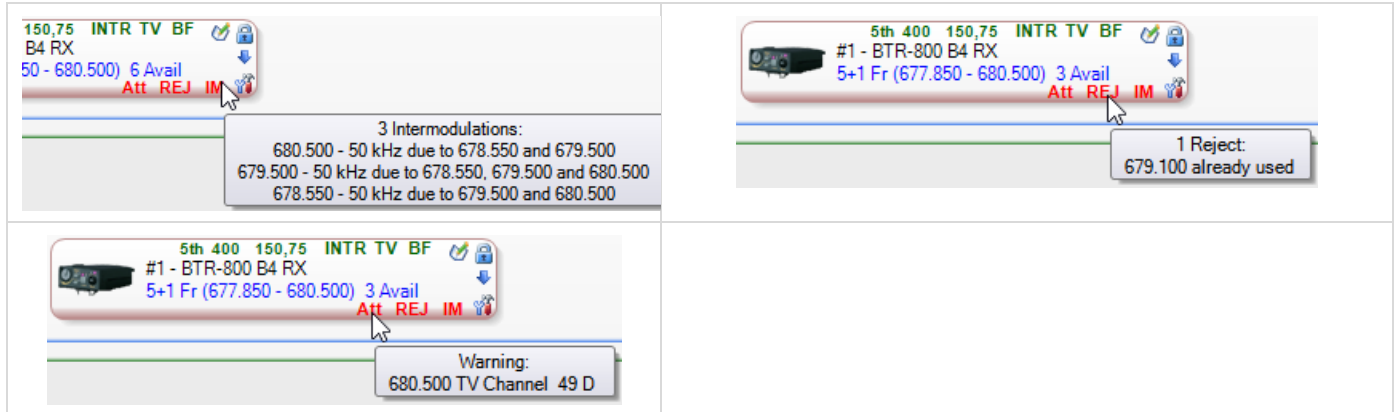
### 18.1 Devices indicators

A device has several indicators:



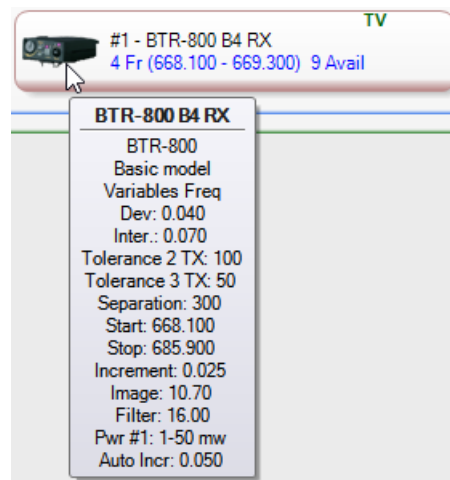
En déplaçant le curseur de la souris au-dessus de chaque indicateur, le détail s'affiche :





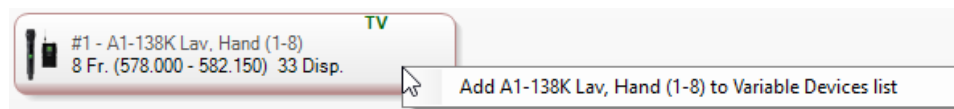
A green indicator indicates a difference of data, while red indicates an anomaly of frequencies found in the stage of the evaluation of all the frequencies.

By placing the cursor over the image of the device, all the parameters of the device are displayed:



The last parameter displayed, Auto-Increment, is a parameter calculated by EazyRF to accelerate calculations. Thus, when the increment is larger, the number of frequencies tested decreases. The value of this parameter depends on several factors, the main ones being Tolerance 2 and 3 TX.

It is possible to add a device NOT INCLUDED in the list of devices (obtained from an external file). To do this, just make a click with the RIGHT mouse button and the following menu appears:



When opening a document, if a device does not exist, its name is DISPLAYED IN GREY (as in the example). In addition, if the device is of type Fixed, the number of Available Freq does not appear, because it cannot be recalculated if the device is not part of the list of devices.

Devices "Undefined" cannot be added to a list.

This option enables the exchange of data file without exchanging the devices file.

This option works with a Fixed or Variable unit. The menu does not appear if the file does not contain the necessary information.

## 18.2 Details

The bottom section of the Global View displays the details of the group, the section and the selected device. This section allows you to edit the parameters and frequencies:

Group - Section - Device	Variables Freq Dev	No	Description	8 Freq	Intermodulation	12 Avail Freq	Options (Dev)
Group  Group 1	Tolerance 2 TX 100	1		470.150 14		16 482.500	Protected
Section  Section 1	Tolerance 3 TX 50	2		470.550 14		16 483.200	Priority
Dev Desc  #1	Separation 400	3		471.050 14		16 484.350	Minimum Evaluation
Shure AD4D G53	Image None	4		471.650 14		16 485.100	Descending order
Wished Freq 8	Filter 32.00	5		472.100 14		16 486.050	<input checked="" type="checkbox"/> Avail Freq

This section may take another form if the size of the screen allows it:

Group - Section - Device	Variables Freq Dev	No	Description	8 Freq	Intermodulation	12 Avail Freq	Options (Dev)
Group  Group 1	Tolerance 2 TX 100	1		470.150 14		16 482.500	Protected
Section  Section 1	Tolerance 3 TX 50	2		470.550 14		16 483.200	Priority
Dev Desc  #1	Separation 400	3		471.050 14		16 484.350	Minimum Evaluation
Shure AD4D G53	Image None	4		471.650 14		16 485.100	Descending order
Wished Freq 8	Filter 32.00	5		472.100 14		16 486.050	<input checked="" type="checkbox"/> Avail Freq
Type  Micros	Start 470.125	6		472.650 14		16 487.450	<input checked="" type="checkbox"/> Auto Start
	Stop 509.875	7		473.300 14		16 494.550	
	Increment 0.025	8		474.650 14		16 496.350	

The name of the Group and the Section can be edited in this zone:

Group - Section - Device	
Group	Group 1
Section	Section 1
Dev Desc	#1
	Shure AD4D G53
Wished Freq	8
Type	Micros

The description of the device (function) can be changed also. The desired number of frequencies can be changed with the arrows or entered directly (up to 40 frequencies per device). It is also allowed to change devices, such BTR-800 B4 RX to BTR-800 E88 RX or any other device. It is not allowed to change an "Undefined" device.

The parameters of the selected device appear in:

Variables Freq Dev	
Tolerance 2 TX	100
Tolerance 3 TX	50
Separation	300
Image	10.70
Filter	16.00
Start	470.000
Stop	560.000
Increment	0.005

The third part of details display the frequencies:

No	Description	4 Freq	Intermodulation
1	Camera 4	470.000	
2	Camera 5	470.300 <sup>14</sup>	
3		470.700 <sup>14</sup>	
4		471.200 <sup>14</sup>	

The column Description provides a description of the use of the frequency. To auto-increment the description (it takes that it ends with a digit): select the description, press the Ctrl and Alt keys simultaneously and then extend the selection keys. To copy without incrementing, press Alt only.

In the case of devices "Lectrosionics", they use a hexadecimal numbering number corresponding to the frequency channel, this value is displayed by moving the mouse cursor on the frequency:

686.600	50
686.900	50
687.400	50

Ch D2

The "Intermodulation" column is not editable, it is reserved for EazyRF to display problematic results of the evaluation of each frequency.

The frequencies can be changed manually. It is allowed to drag&drop data from an Excel spreadsheet. In Excel, the data must be in columns. Text data is copied in the Description column and numeric data in the Frequency column (this can be done in all editing windows).

Available frequencies appear here:

22 Avail Freq	
27	549.200
27	549.700
27	550.050
27	550.500
27	551.050
27	552.650
27	553.400
28	554.050

These frequencies can be dragged onto the frequency list. the device becomes "Protected" of an automatic evaluation.

Options (Dev)
<input checked="" type="checkbox"/> Protected
Priority
Minimum Evaluation
Descending order
<input checked="" type="checkbox"/> Avail Freq
<input checked="" type="checkbox"/> Auto Start

The Options section allows you to modify some evaluation parameters. The "Protected" option has already been seen. The "Priority" option allows you to place a device first and foremost in the list of evaluation. If the device is protected, it goes without saying that the assessment cannot have a priority.

The option "Minimum Evaluation" is intended for devices of type "Walkie/Talkie" which uses frequencies too close. With this option only the verification of the value of the frequency is retained in the evaluation (without evaluation of intermodulations).

The option "Descending Order" allows to estimate the frequencies of a device from the "Stop" value down to the "Start".

The "Avail Freq" enable or disable the calculation of available frequencies if the global option is on.

The "Auto Start" option enables or disables the Auto Start function. When the Auto Start calculation is enabled, the first device different from the previous one will use a Start frequency a little further than the values found on the previous device in the evaluation order. An example:

Group 1 - Section 1			Group 1 - Section 1		
#1 - BTR-800 E88 RX	4 Fr 470.100 - 471.300	470.100 - 487.900	471.300	487.900	#1 - BTR-800 E88 RX
#1 - beyerdynamic TG 1000 A	2 Fr 536.400 - 536.900	470.100 - 788.900			536.900

Instead of:

Group 1 - Section 1			Group 1 - Section 1		
#1 - BTR-800 E88 RX	4 Fr 470.100 - 471.300	470.100 - 487.900	471.300	487.900	#1 - BTR-800 E88 RX
#1 - beyerdynamic TG 1000 A	2 Fr 471.900 - 472.650	470.100 - 788.900	472.650		

When entering frequency manually, it is possible that the added value influences the existing devices. Then a window will appear to indicate that this data will influence "Intermodulations" on some devices:

Device	Frequency	Prior IM	After IM
<b>#1 - A1-128K Lav, Hand (1-8) (Group 1, Section 1)</b>			
	578.000	0 kHz - 578.700 & 586.600 & 587.300	0 kHz - 580.000 & 584.650 & 586.650
	578.700	0 kHz - 578.000 & 586.600 & 587.300	
	579.200	0 kHz - 582.900 & 586.600	50 kHz - 582.900 & 586.650
	580.000	50 kHz - 586.600 & 593.150	0 kHz - 578.000 & 584.650 & 586.650
	580.550	50 kHz - 583.550 & 586.600	
<b>#2 - A1-128K Lav, Hand (1-8) (Group 1, Section 1)</b>			
	582.900	0 kHz - 579.200 & 582.900 & 586.600	0 kHz - 583.550 & 586.650 & 587.300
	583.550		0 kHz - 582.900 & 586.650 & 587.300
	584.650		0 kHz - 578.000 & 580.000 & 586.650
		0 kHz - 578.000 & 578.700 & 587.300	0 kHz - 578.000 & 580.000 & 584.650

### 18.3 Selection

It is possible to select multiple devices simultaneously in two ways. The first method uses the CTRL + click a device button. The second method is to click on the unoccupied end of a section or group, keep the mouse button pressed and extend the selection:



When there is more than one device selected, the illustrated description corresponds to the button which is the clearest (in this case, the BTR-800 B4 TX):



The status line shows the number of selected devices (in addition to providing information on the document):

Nb Grp: 1    Nb Sect: 1    Nb Dev: 2    Nb Freq: 6 (6 BTR-800) (536.100 to 669.450 MHz)    0 IM    2 Dev Selected

With a multiple selection, some parameters can be changed simultaneously: Tolerance, Separation, the Image Frequency and Filter. The value of Start, Stop or Increment will change only for the highlighted device.

It is allowed to click one of the devices selected without losing its selection (allows to bring individual modifications). To end a multiple selection, click an unselected device, or the bottom of a section or a group.

## 18.4 Toolbar

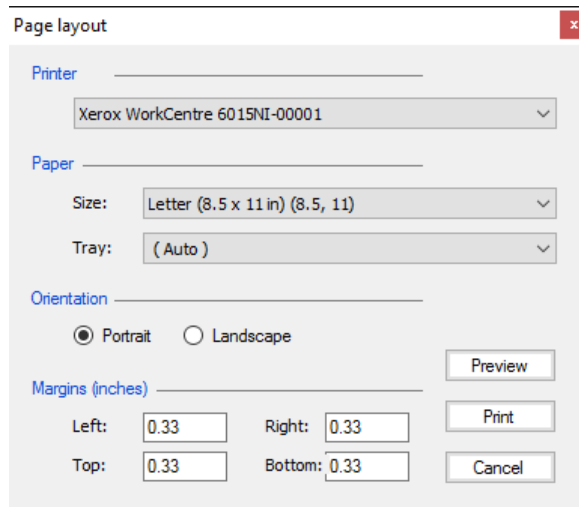


### 18.4.1 Printing

The second section of the toolbar allows you to manage printing and page layout:



The second item can preview before printing. The third item shows the page layout:

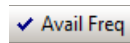


N.B. 1 inch = 2.54 cm

Finally, the last option allows you to create and manage the presentation of a report for a client, see section 2.8.

### 18.4.2 Available Frequencies

The following zone of the toolbar:



This command enables or disable the calculation of available frequencies. With a device type Shure UHF-R L3 for example, frequencies vary from 638.000 to 698.000 in steps of 25 kHz, thus a possibility of 2400 frequencies. With several devices of this type and a lot of frequencies within this range, the calculation of available frequencies with each of the possible values with a large number of frequencies requires a high time. As the processor performance has its limits of performance, there are not so many solutions. EazyRF becomes slow according to the power of the computer. This command allows to bypass this type of problems.

By deactivating the calculation of the available frequencies, EazyRF finds a big fluidity. In addition, the calculation of available frequencies can be enabled or disabled for each device individually.

In the window of edition or addition of manual device, an option allows you to launch the calculation of the available frequencies only for the concerned device:



In this way, the calculation is more quickly made and you keep access to the list of available frequencies.

### 18.4.3 Clipboard

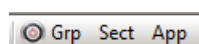
The following zone of the toolbar allows to manage the operations of the clipboard:



In the first part of the commands, you can cut a group, a section or a device. In the second part, the commands allow the copy of a group, a section or a device. Finally, the last item allows to paste the data from the previous operation. Obviously, these commands work from a document to the other one or from an EazyRF application to another one.

### 18.4.4 Off function

The next area of the toolbar manages "Off Function":



EazyRF allows to put a device, a section or a group to "Off", a bit like turning power off on devices. When a device is off, it is displayed as:



No	Description	Freq	Intermodulation
1		Off (632.100)	
2		Off (632.400)	
3		Off (632.850)	
4		Off (633.450)	

This operation frees the frequencies assigned to a device. The display allows you to see what these frequencies were. Note that if I add another device, these frequencies become available and may be assigned to it.

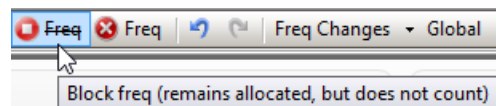
The purpose of these commands is to release devices without removing them.

### 18.4.5 Blocked / Released Frequencies

The following section of the toolbar allows to manage frequencies individually:

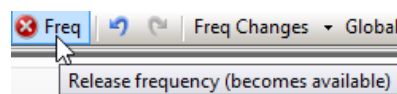


The first command:



Will block a frequency, e.g. eliminate this frequency of allocation in another device. A blocked frequency corresponds to a frequency that you can identify as used but not on your frequency plan (undesirable). It is best to use this command in a device containing only those blocked (easier to see) frequencies.

The second command:



Frees a frequency, e.g. remove the attribution of the plan. So it becomes available for another device. This is the equivalent of putting device "Off" but for a particular frequency.

These commands may not be displayed if the width of main window is not sufficient.

## 18.4.6 Undo / Redo

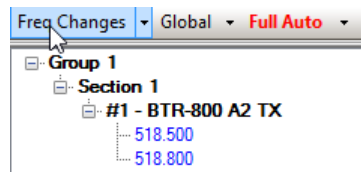
The next section of the toolbar control operations "Undo" & "Redo" commands:



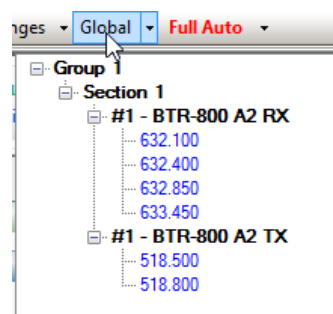
There is no limit on the level of undo/redo of the commands.

## 18.4.7 Changes

Finally, the last commands of the toolbar allow you to see the frequencies changes. The first command shows the changes arisen in the last made operation:



The following command displays the changes since the last backup or opening of the document:



The command affecting the modes of calculations was seen in the chapter 3.

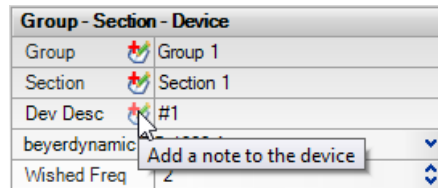
## 18.5 Notes

### 18.5.1 Notes - Global View

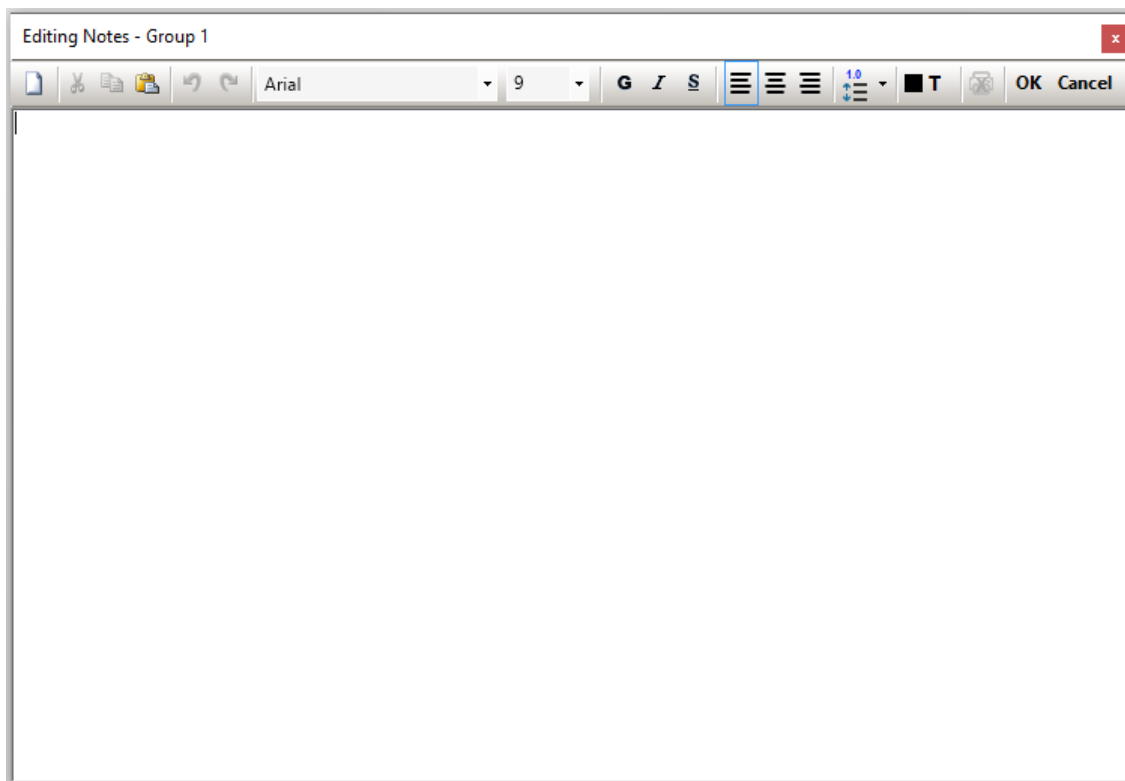
Notes can be added to the document, groups, sections and devices.

The principle of operation is simple, commands to add a note and commands to modify each device, section, group; for the document, only one button to add / modify because there is only one document to edit.

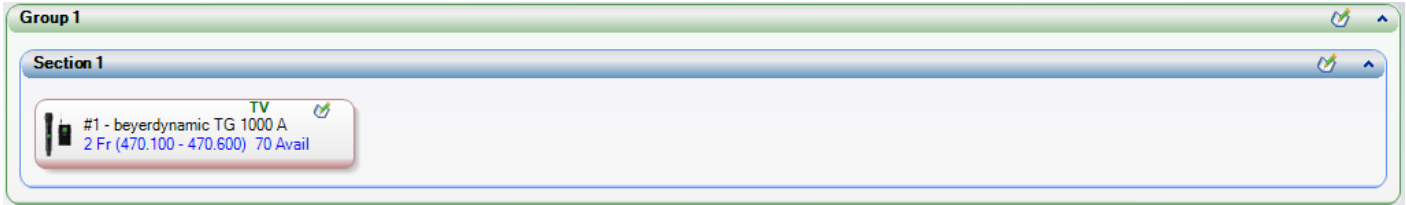
The commands for adding notes have been centralized in the detail section of the selection:



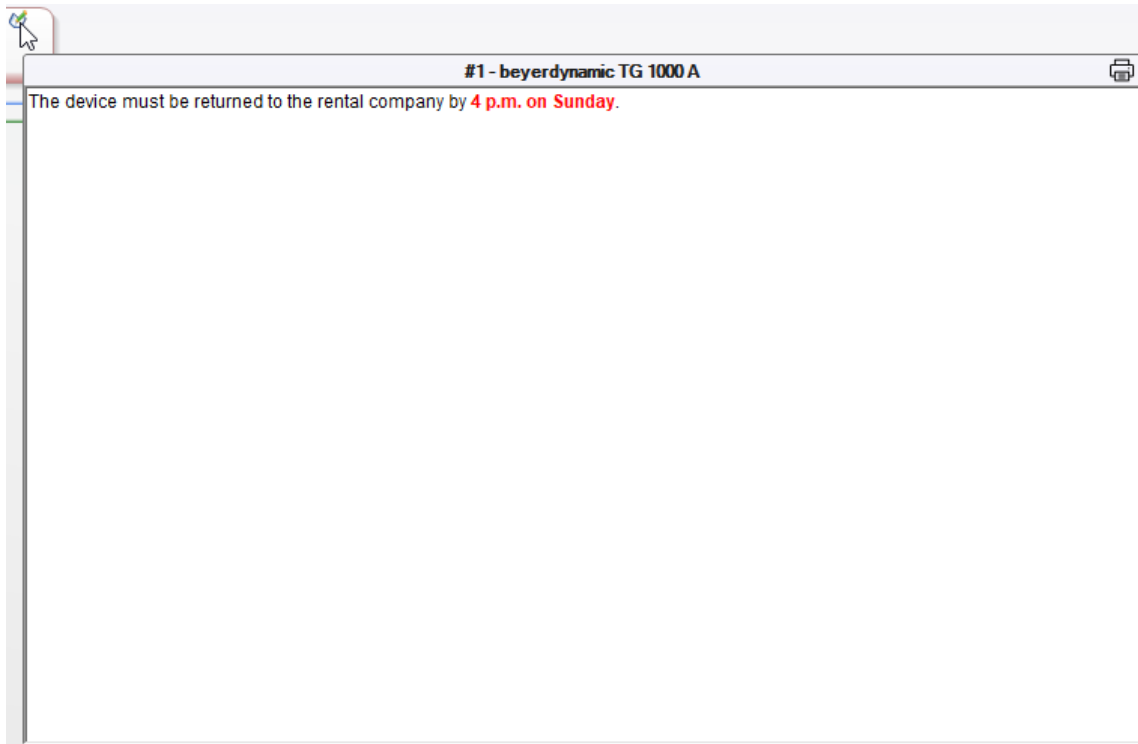
The "Note" icon contains a "+" to indicate an addition of a note. By clicking on the add note, the editor appears:



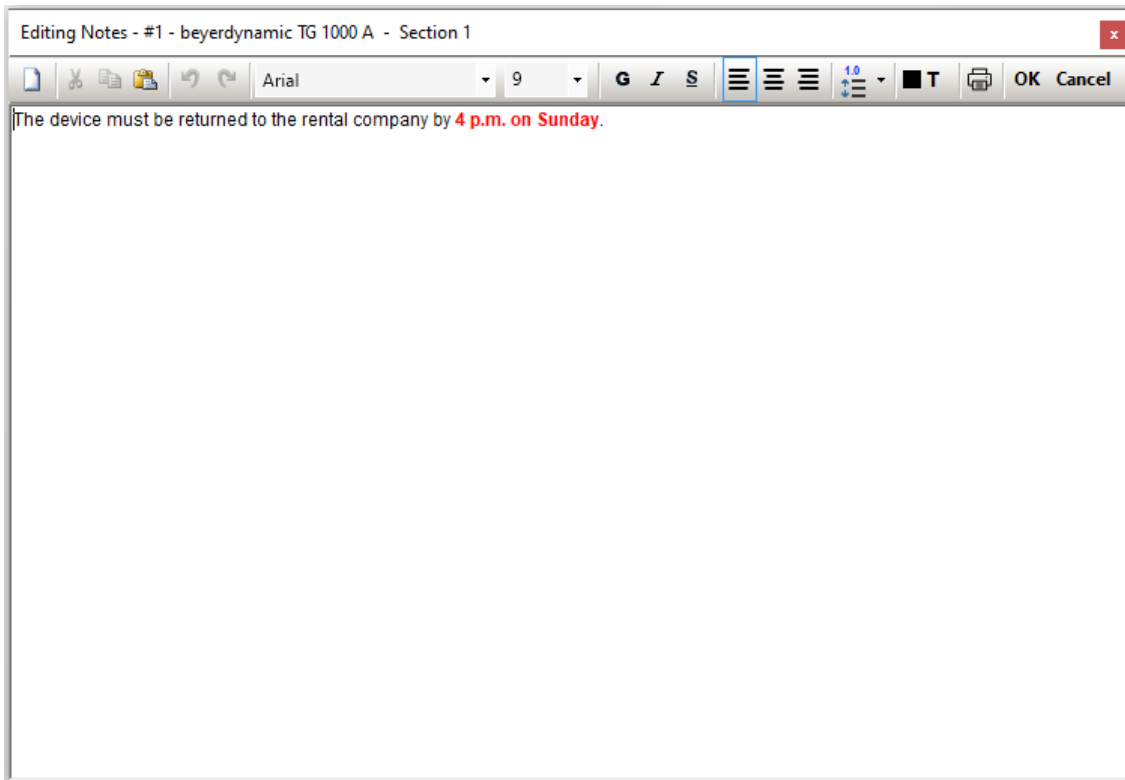
When a note is added, the add note icon disappears and another icon appears on the group, section or device:



By moving the mouse pointer over the note icons, the content appears:

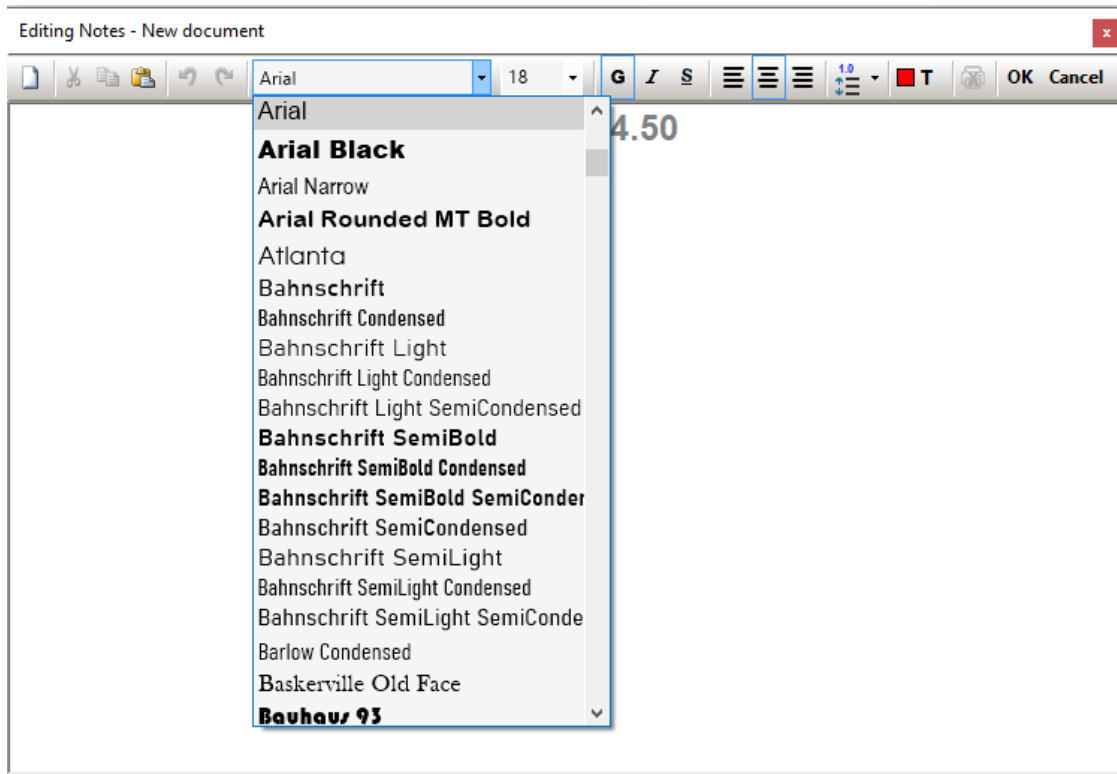


By clicking on the icon, the note editor appears instead of the text bubble:

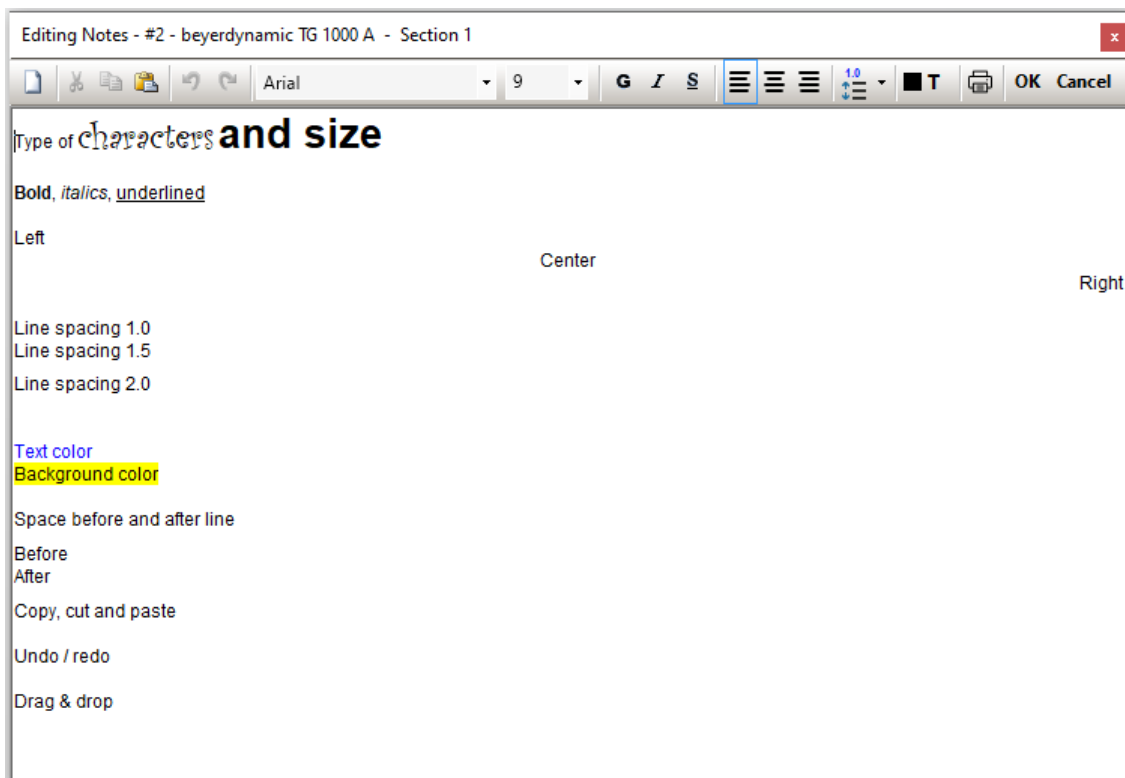




## 18.5.2 Note editor

The note editor allows you to style the text from its toolbar:

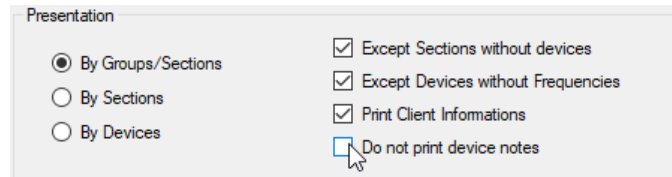


Here is an overview of the supported formatting:

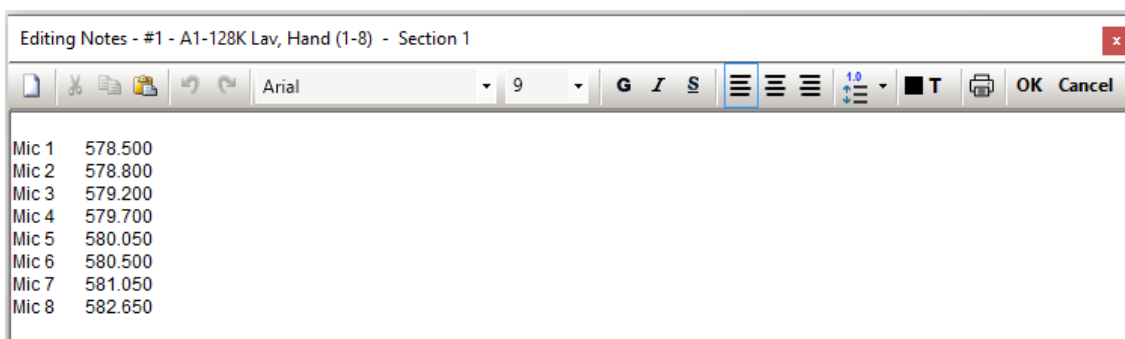


The printer icon sets whether or not to print device notes in reports (  or  ). Only device notes are printable.

Printing of notes for devices can be enabled individually for each device and globally enabled / disabled when printing reports:



To copy frequencies and descriptions of a device, make a selection in a device editor, copy with the keyboard: CTRL + C:



To drag & paste from Excel or Word, these must have been started as administrator.

You can paste pictures as well.

If you need more sophisticated text formatting, you can do it in Word and simply copy it to EazyRF.

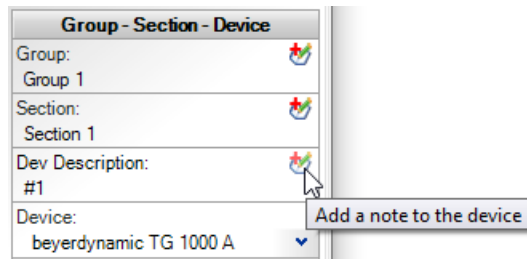
The data is saved in compressed format (zip), therefore of reasonable size.

The size of the edit window can be adjusted and saved for use when EazyRF is restarted. To restore the default size, increase or decrease the size with the CTRL key, the size will be adjusted at the end of the operation.

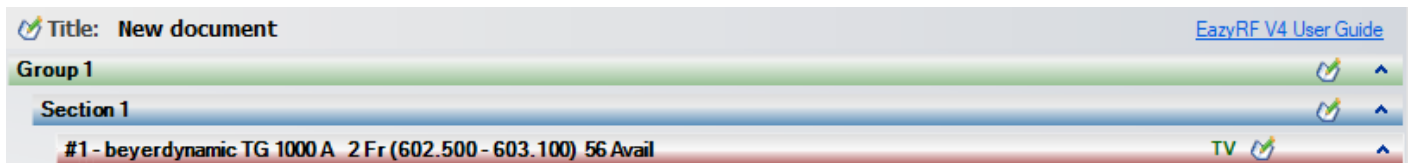
The TAB key moves to the note of the next device, while Shift + TAB, moves to the previous device. To use tabulation, you must use the CTRL key simultaneously.

### 18.5.3 Notes – Detailed View

Adding a note from the "Detailed View" pane is done in a similar way, the commands are always found in the detail section of the selection:

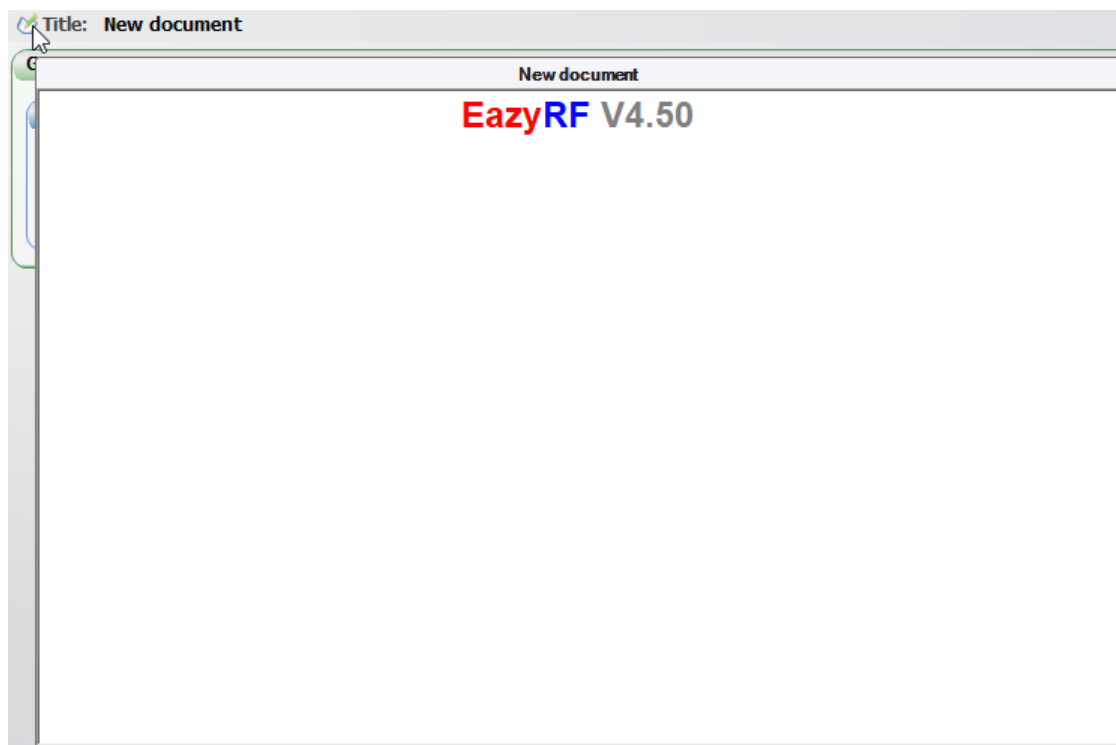


With the result when notes are added to a device, a section, a group and to the document:

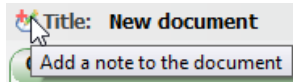


### 18.5.4 Notes - Document

The operation of a note for the document is slightly different. By default, EazyRF offers content (EazyRF with the latest version number):

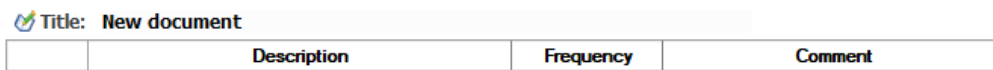


Adding and viewing the note is done from the same command:



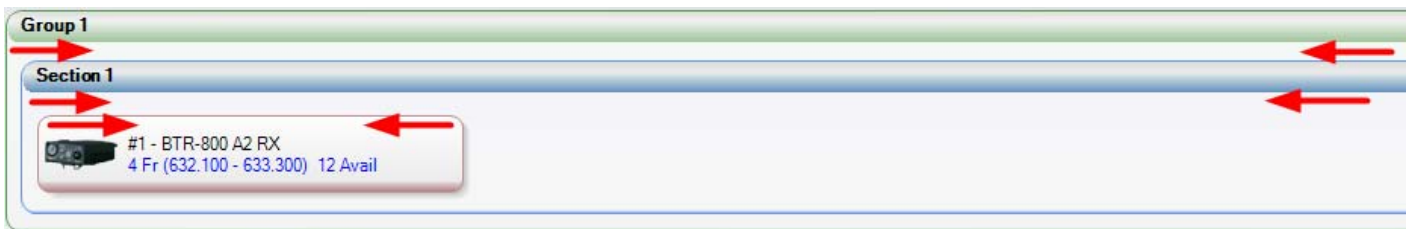
### 18.5.5 Notes – Frequencies Plan

In the "Frequencies Plan" view, only the command for the document note is found:



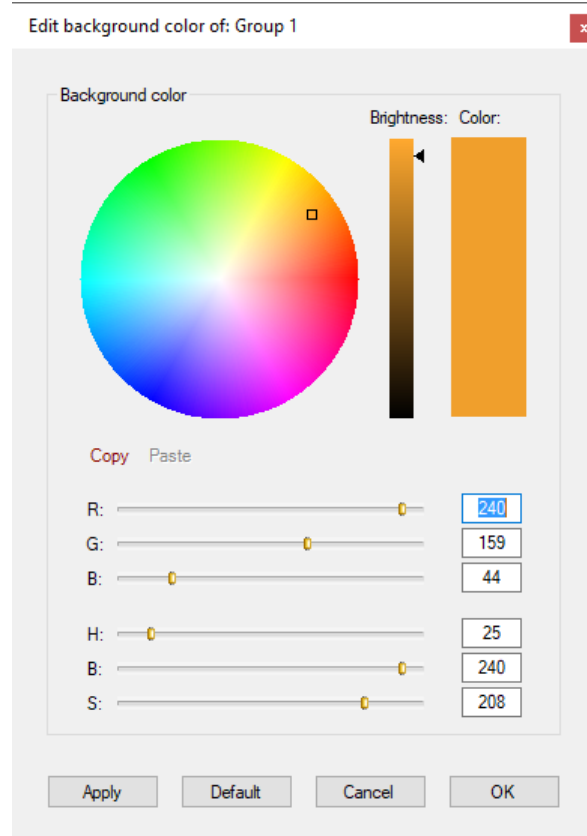
### 18.6 Background color – Group/Section/Device/Frequencies

One of the background colors of each group, section, and device can be changed in most panes. You can also change the background color of the frequencies in the global, detailed pane and in the device editor (no matter where it is called). To do this, simply double-click at the top of the group (at the bottom of the title area), at the top of a section (at the bottom of the title area), or in the top area. of a device:



To change the background color of one or more frequencies, several methods exist, either by the global view, the detailed view, the device editor and the list of the contents of the document, more details in the following sections.

The color editor:



The "Apply" command allows the same color to be applied to a selection of devices (the selection of devices can be done on several sections of the same group). When the device selection is multiple, the displayed color is the color of the device that was double-clicked.

The "Default" button recalls the basic color used by EazyRF.

"Cancel" restores the color(s) used when calling the editor.

The "Copy/Paste" commands allow you to copy a color and apply it elsewhere.

The purpose of this command is to emphasize certain details and not to create a multitude of colors:



### 18.6.1 Frequency Background Color - Global and Detailed View

First a frequency or more must be selected before being able to call the background color editor. This can be called in two ways, either by double-clicking on a section of the frequency header (global view), or by right-clicking on the frequencies (size of the area - 30 %):

8 Freq	
578.000	31
578.300	32
578.700	32
579.200	32
579.550	32
580.000	32
580.550	32
582.150	32

8 Freq	
578.000	31
578.300	32
578.700	32
579.200	32
579.550	32
580.550	32
582.150	32

Change Background color

With as result for example:

8 Freq	
578.000	31
578.300	32
578.700	32
579.200	32
579.550	32
580.000	32
580.550	32
582.150	32

The background color of the selected frequency is displayed when launching the editor.

## 18.6.2 Background Color Frequencies - Device Editor

We can do the same treatment with the device editor in the global pane:

Device Edition ✕

Description:

Device:  Micros

Start:  Stop:  Increment:

Auto Start:

Descending order

5th Order Evaluation (if Global)

TV Channels: 35 (596-602 MHz ...)

Tolerance 5th:

TX Power Level:  1-50 mw

Fr Nbr:   Protected  Manual  Avail Freq

+ Ctrl = 1 Col

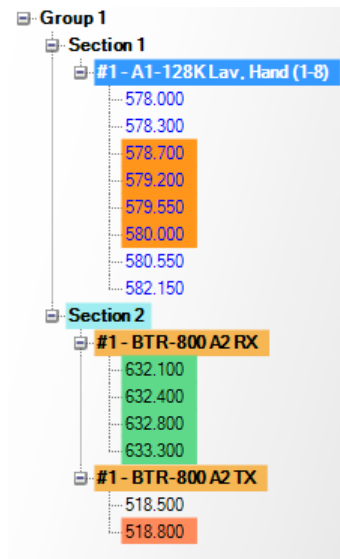
No	Description	Freq	Intermodulation
1		578.000 31	
2		578.300 32	
3		578.700 33	
4		582.000 32	
5		580.000 32	
6		580.550 32	
7		582.150 32	
8			

33 Avail Freq

- 32 582.900
- 32 583.550
- 33 584.650
- 33 586.700
- 33 587.300
- 34 592.000
- 34 593.150
- 36 602.500
- 36 602.900
- 36 603.200
- 36 604.100
- 36 604.550
- 36 604.900
- 36 605.400
- 36 606.350
- 38 614.500

The background color editor can be called either by the right mouse button or by double-clicking on the frequency header (full area).

The background colors of the group/section/device/frequency are displayed in the device list of a document in the panes: Intermodulation, Spectrum View, On Tour and Classification:

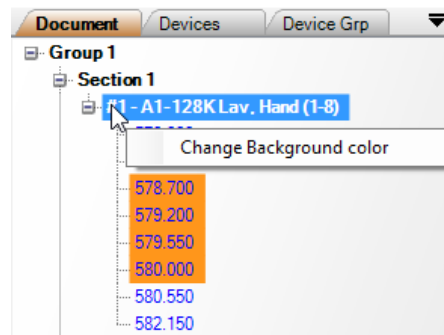


The background colors of groups, sections, and devices can be changed from this list.

In addition, the background color of the frequencies can be changed wherever the device editor can be called.

### 18.6.3 Frequency Background Color - Document List

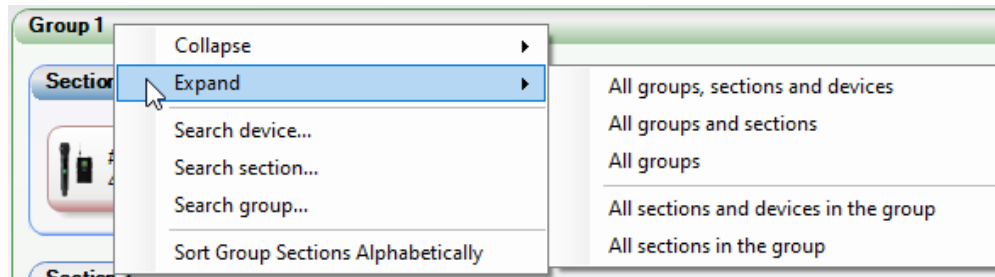
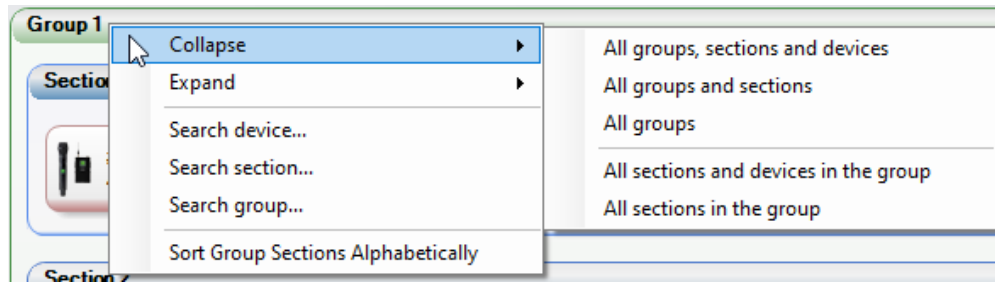
You can also call the background color editor via the list of the contents of a document in the Intermodulations and On Tour views:



## 18.7 Group / Section menu

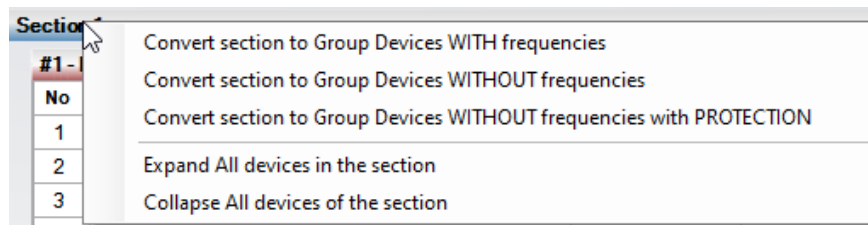
### 18.7.1 Collapse / expand

From the global and detailed views, a menu is accessible with the right mouse button on the group header:



It is thus possible to apply the expand / collapse function to all groups, sections or devices of the document, of a group or of a section.

The "Detailed View" is used to manage the expand/collapse of devices in a section:



## 18.7.2 Search Device, Section or Group

The "Search device..." function allows you to find a device by entering part of its name:

Search Device

Q sh

Device	Section	Group
#1 - Shure AD4D G53	Section 1	Group 1
#1 - Shure AD4Q G56	Section 2	Group 1
#1 - Shure PSM 1000 J8J	Section 2	Group 1
#1 - Shure AD4D G55	Section 2	Group 1
#1 - Shure UR4D G1	Section 1	Group 2
#1 - Shure UR4D H4	Section 1	Group 2

#1 - Shure AD4Q G56

4 Freq

486.500

487.300

489.750

525.400

Selecting a device in the list displays the device in the document even if the group or section is in collapsed:

**Group 1**

Section 1

Section 2

#1 - Shure AD4Q G56 TV  
 4 Fr (486.500 - 525.400) 41 Avail

Group 2

Group 3

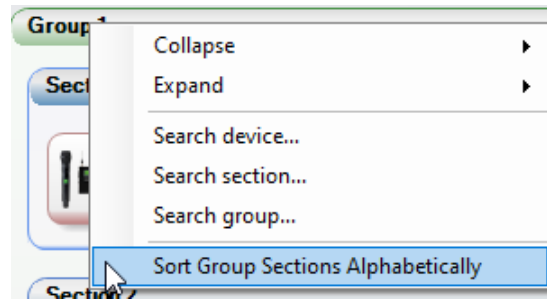
Group 4

Search Device

Q sh

Device
#1 - Shure AD4D G53
#1 - Shure AD4Q G56
#1 - Shure PSM 1000 J8J
#1 - Shure AD4D G55
#1 - Shure UR4D G1
#1 - Shure UR4D H4

### 18.7.3 Classification of section names in alphabetical order



## 18.8 Evaluate commands



### 18.8.1 Evaluate Frequencies list

This command restarts the calculation of intermodulations manually to check whether a change has not occurred.

### 18.8.2 Evaluate Devices

This allows the calculation of the frequencies of unprotected devices to be redone in automatic mode.

### 18.8.3 Manual Evaluation

This operation launches an editor allowing to perform intermodulation calculations for frequencies independent of those of the document, the goal is to display the values of the intermodulations:

Interferences ✕

Frequencies:

**IMs - 2th order**

Fr-1	Fr-2	IM
471.000	472.500	469.500
"	"	474.000
471.000	475.000	467.000
"	"	479.000
472.500	475.000	470.000
"	"	477.500

**IMs - 3th order**

Fr-1	Fr-2	Fr-3	IM
471.000	472.500	475.000	473.500
"	"	"	476.500
"	"	"	468.500

**IMs - 5th order**

Fr-1	Fr-2	Fr-3	Fr-4	Fr-5	IM
471.000	472.500				468.000
"	"				468.000
471.000	475.000				463.000
"	"				463.000
472.500	475.000				467.500
"	"				467.500
471.000	472.500	475.000			472.000
"	"	"			464.500
"	"	"			478.000
"	"	"			466.000
"	"	"			480.500
"	"	"			476.000
"	"	"			465.500
"	"	"			471.500
"	"	"			481.500

Thus, the values of the intermodulation frequencies are displayed, the aim of the exercise is theoretical.

### 18.8.4 Recalculate (frequencies)

This module allows you to recalculate all device frequencies in a document, regardless of whether they are protected or not, and the calculation mode is irrelevant.

It goes without saying that this command is not intended to find a solution when adding to an event already in operation. Its purpose is to find new frequencies, either when reusing a previous plan or during planning and the solution is not found at first glance.

Recalculating frequencies is a destructive operation, there is no undoing. The only way to do this is to reload the document, so don't forget before proceeding.

Let's take a simple theoretical example:

**Group 1**

**Section 1**

- #1 - Sennheiser EM3732-II A TV 8 Fr (478.500 - 483.000) 0 Avail
- #1 - Shure AD4Q G55 TV 8 Fr (483.700 - 573.300) 4 Avail
- #1 - Shure AD4D G54 TV 0/2 Fr 0 Avail

**Section 2**

- #1 - Sennheiser Evolution G2 Grp A IEM 6 Fr (518.025 - 522.975) 0 Avail
- #1 - IFB Lectrosonics T4-R1a, Block 23 1 Fr (588.800) 3 Avail

**Group 2**

**Section 1**

- #1 - Shure ADX5D K54 12 Fr (606.350 - 644.300) 6 Avail
- #1 - Sennheiser EM9046 A4 TV 8 Fr (534.500 - 539.000) 0 Avail

**Section 2**

- #1 - Sennheiser SR300 IEM G3 B 8 Fr (626.000 - 630.850) 10 Avail
- #1 - Shure PSM 1000 J8J TV 8 Fr (554.600 - 570.300) 5 Avail

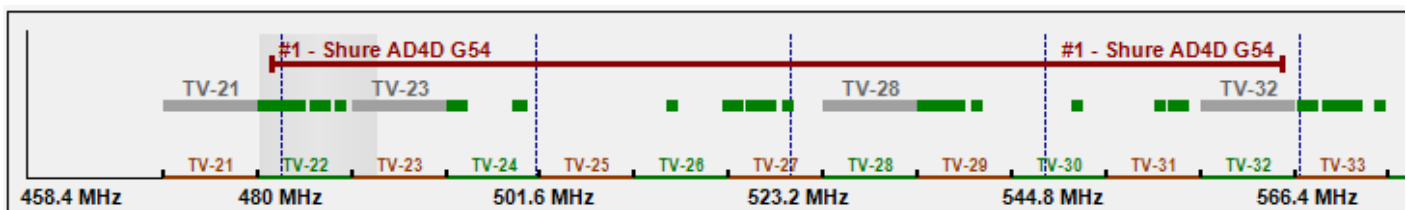
**Group 3**

**Section 1**

- #1 - BTR-80N H3 RX 4 Fr (650.100 - 651.300) 10 Avail
- #1 - BTR-80N H3 TX 2 Fr (500.100 - 500.400) 0 Avail

The Shure AD4D G54 device has just been added and no frequencies are available.

If we take a look at the frequency spectrum, we can see that the frequency band used by the device is not overused:



So maybe a recalculation of the devices would allow a rearrangement of frequencies. The "Recalculate" module allows you to do this:

Recalculate the frequencies of the devices in the document

Evaluation method

Freq Range
  In order
  Random
  Number of freq per section
  Independent device and freq range

All zones
 11 Devices, 65/67 Freq

Order of evaluation. Use the left margin to change Ascending/Descending.

- Zone 1
- Zone 2

Devices	Zone - Groupe - Section	Freq Range
<b>Devices list (67 Fr)</b>		
#1 - BTR-800 H3 RX (4 Fr)	Zone 2 - Group 3 - Section 1 (6 Fr)	650.100 - 667.900
#1 - BTR-800 H3 TX (2 Fr)		500.100 - 517.900
#1 - Sennheiser EM9046 A4 (8 Fr)	Zone 1 - Group 2 - Section 1 (20 Fr)	534.000 - 558.000
#1 - IFB Lectrosionics T4-R1a, Block 23 (1 Fr)	Zone 1 - Group 1 - Section 2 (7 Fr)	588.800 - 614.300
#1 - Sennheiser Evolution G2 Grp A IEM (6 Fr)		518.025 - 554.000
#1 - Sennheiser SR300 IEM G3 B (8 Fr)	Zone 1 - Group 2 - Section 2 (16 Fr)	626.000 - 668.000
#1 - Shure ADX5D K54 (12 Fr)	Zone 1 - Group 2 - Section 1 (20 Fr)	606.000 - 662.875
#1 - Shure PSM 1000 J&J (8 Fr)	Zone 1 - Group 2 - Section 2 (16 Fr)	554.250 - 625.750
#1 - Shure AD4D G54 (0/2 Fr)	Zone 1 - Group 1 - Section 1 (18 Fr)	479.125 - 564.875
#1 - Sennheiser EM3732-II A (8 Fr)		470.000 - 560.000
⬇ #1 - Shure AD4Q G55 (8 Fr)		470.125 - 636.000

Exclude devices with number of desired frequencies
  Random Freq
 Evaluate

EazyRF displays by default the list of devices according to the frequency bandwidth of each device less the spaces occupied by the television channels, that is the option "Freq Range" of the "Evaluation method". So, devices with limited bandwidth will be re-evaluated first and so on. Let's do an assessment:

Recalculate the frequencies of the devices in the document

Evaluation method

Freq Range     In order     Random     Number of freq per section     Independent device and freq range

All zones

Order of evaluation. Use the left margin to change Ascending/Descending.    11 Devices, 67/67 Freq

Devices	Zone - Groupe - Section	Freq Range
Devices list (67 Fr)		
#1 - BTR-800 H3 RX (4/4 Fr)	Zone 2 - Group 3 - Section 1 (6 Fr)	650.100 - 667.900
#1 - BTR-800 H3 TX (2/2 Fr)		500.100 - 517.900
#1 - Sennheiser EM9046 A4 (8/8 Fr)	Zone 1 - Group 2 - Section 1 (20 Fr)	534.000 - 558.000
#1 - IFB Lectrosionics T4-R1a, Block 23 (1/1 Fr)	Zone 1 - Group 1 - Section 2 (7 Fr)	588.800 - 614.300
#1 - Sennheiser Evolution G2 GIP A IEM (6/6 Fr)		518.025 - 554.000
#1 - Sennheiser SR300 IEM G3 B (8/8 Fr)	Zone 1 - Group 2 - Section 2 (16 Fr)	626.000 - 668.000
#1 - Shure ADX5D K54 (12/12 Fr)	Zone 1 - Group 2 - Section 1 (20 Fr)	606.000 - 662.875
#1 - Shure PSM 1000 J&J (8/8 Fr)	Zone 1 - Group 2 - Section 2 (16 Fr)	554.250 - 625.750
#1 - Shure AD4D G54 (2/2 Fr)	Zone 1 - Group 1 - Section 1 (18 Fr)	479.125 - 564.875
#1 - Sennheiser EM9032-II A (8/8 Fr)		470.000 - 560.000
#1 - Shure AD4D G54 (2/2 Fr)		470.125 - 636.000

Exclude devices with number of desired frequencies     Random Freq    Evaluate

We can see that all devices now have their frequencies. The color of the device name indicates the status of the changes: green = reassessment without changes, blue = reassessment with frequency changes, and red = the desired number of frequencies was not found.

Different evaluation methods exist: by "Freq Range", seen previously, "In Order", according to the order of appearance in the groups / sections, "Random", in an undefined order based on chance and finally, by "Number of freq by sections" and by "Devices of independent groups with frequency range".

The devices can be recalculated in descending order using the left margin of the device name:

#1 - Shure AD4D G54 (2/2 Fr)

#1 - Shure PSM 1000 J&J (8/8 Fr)

#1 - Shure AD4D G54 (8/8 Fr)

Set Descending Order on

All groups can be recalculated or selected as needed:

All groups

Group 1

Group 2

Group 3

Finally, in the lower part of the window there are some additional options:

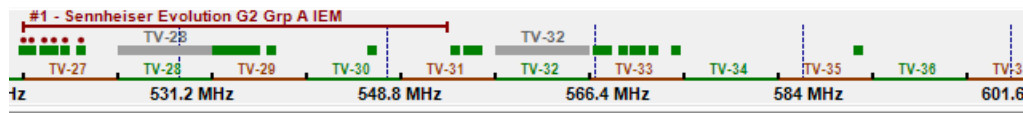
Exclude devices with number of desired frequencies

Random Freq

The "Exclude devices with number of desired frequencies" option allows you to exclude devices whose frequencies have already been found from re-evaluation. It goes without saying that this option is of no use for a single device, a certain number is required for a tangible result.

The option "Random Freq" recalculates the frequencies of the devices randomly, so never the same result twice.

Each device on the list can be selected and the monitoring is done in the views thus allowing to have a better idea of a solution (descending order for example):



the document

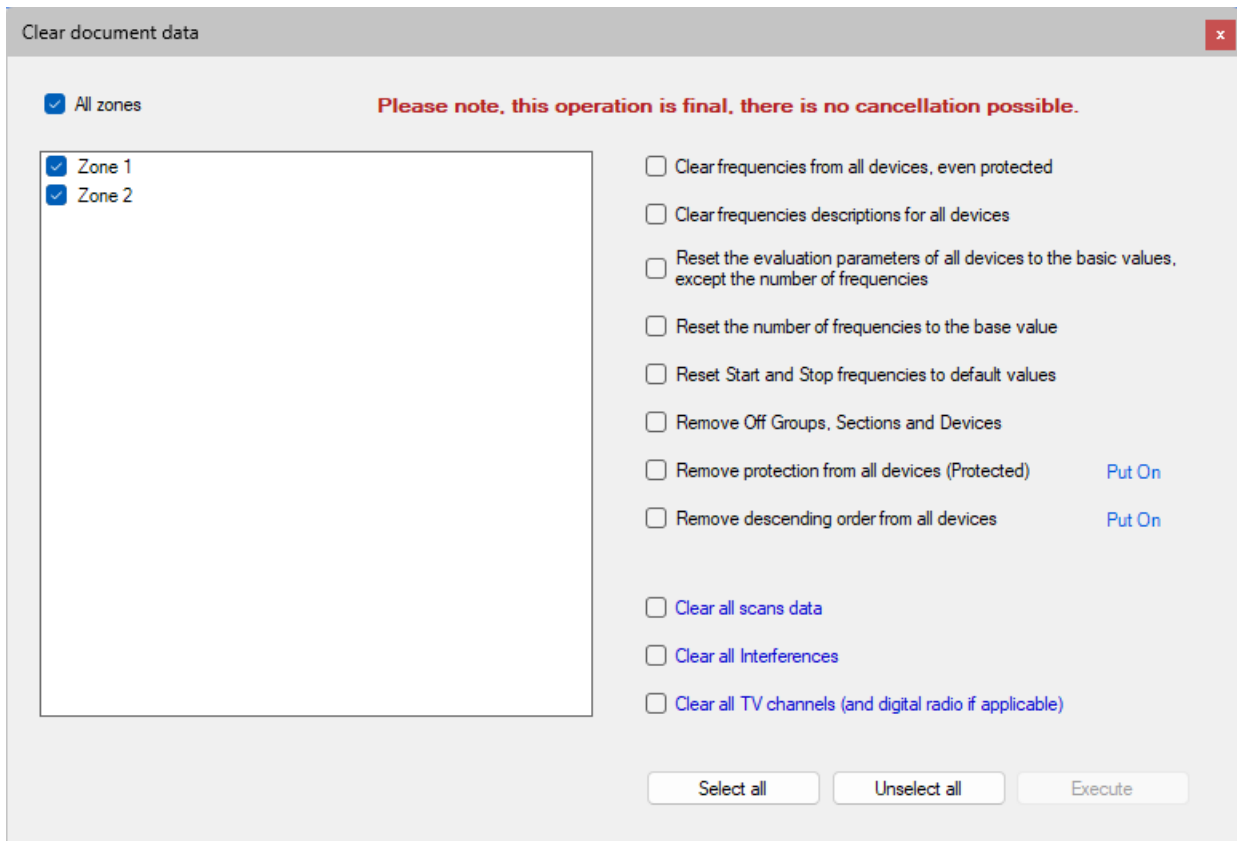
Random       Number of freq per section

Order of evaluation. Selection = Descending order. 11 Devices, 65/67 Fr

Devices	Scene	Freq Range
<b>Devices list (67 Fr)</b>		
<input type="checkbox"/> #1 - Sennheiser EM3732-II A (8 Fr)	Group 1 - Section 1 (18 Fr)	470.000 - 560.000
<input type="checkbox"/> #1 - Shure AD4Q G55 (8 Fr)		470.125 - 636.000
<input type="checkbox"/> #1 - Shure AD4D G54 (0/2 Fr)		479.125 - 564.875
<input checked="" type="checkbox"/> #1 - Sennheiser Evolution G2 Grp A IEM (6 Fr)	Group 1 - Section 2 (7 Fr)	518.025 - 554.000

### 18.8.5 Clear (data)

This tool allows you to erase part of the data from a document:

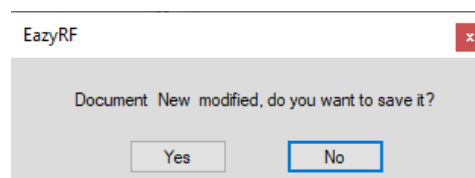


First, you select which groups will be affected, or all groups. No device is erased, only its data.

Then you have the choice to erase either the frequencies of the devices of the selected groups, or the descriptions of the frequencies, or to put the evaluation parameters back to their basic values (except the number of frequencies), or to replace the number of frequencies to the default number, either to replace the start and stop frequencies to default, either to remove the deactivation (power off) of the groups, sections and devices, and finally, or to remove or put on the protection on the devices of the groups. These functions can be combined.

When all the groups are selected, you have the choice to erase the global data of the document, either the scans, the list of interference or the list of TV channels (and digital radio channels for France).

This function is final, no undo option exists. For this reason, if your document has not been saved beforehand, when you launch the "Execute" command, a window asks you if you want to save it:



## 18.9 Shortcuts

There are some keyboard shortcuts to perform certain commands:

Delete or Backspace: erase one cell (or several)

Ctrl + F: Add Fixe Device

Ctrl + V: Add Variable Device

Ctrl + G: Add Group

Ctrl + S: Add Section

Ctrl + Z: Undo command

Ctrl + Y: Redo command

Ctrl + A: Enable/Disable Auto-Increment of the device

Arrow Left, Right, Up and Down: Move the selection to another device in a section

## 19 - Detailed View

The "Detailed View" is a different representation of the data of the "Global View". It allows the detailed display of devices frequencies:

The screenshot displays the EazyRF V4.50.210820 software interface in "Detailed View" mode. The window title is "Test Guide 4.50 Vue Détaillée-01". The interface is divided into several sections:

- Left Panel:** A list of devices under "List of Devices A-Z 0-9". The list includes various device models like A1-101K, A1-102K, etc., with their respective frequencies and descriptions.
- Central Panel:** A table showing the detailed view of frequencies for three sections:
 

No	Description	Frequency	Intermodulation	Comment
<b>Section 1</b>				
#1 - Sennheiser 3732-C 2 Fr. (548.500 - 548.800) 38 Disp. TV				
1		548.500	27	
2		548.800	27	
#1 - Sennheiser EM3732-II A 12 Fr. (470.000 - 527.450) 10 Disp. TV				
1		470.000	14	
2		470.700	14	
3		472.400	14	
4		473.550	14	
5		475.300	14	
6		497.000	18	
7		506.600	20	
8		507.400	20	
9		510.900	20	
10		524.200	23	
11		524.600	23	
12		527.450	23	
#1 - Shure AD4Q G54 8 Fr. (482.500 - 487.000) 11 Disp. TV				
1		482.500	16	
2		482.900	16	
3		483.400	16	
4		484.000	16	
5		484.450	16	
6		485.000	16	
7		485.650	16	
8		487.000	16	
<b>Section 2</b>				
#1 - Sennheiser SR300 IEM G3 A 8 Fr. (518.500 - 523.350) 9 Disp. TV				
No	Description	Frequency	Intermodulation	Comment
1		518.500	22	
2		518.950	22	
3		519.500	22	
4		520.150	22	
5		520.650	22	
- Right Panel:** Configuration options for the selected device, including "Group - Section - Device", "Variables Freq Dev" (Tolerance 2 TX: 100, Tolerance 3 TX: 50, Separation: 300, Image: 10.70, Filter: 16.00, Start: 548.000, Stop: 638.000, Increment: 0.005), and "Options (Dev)" (Protected, Priority, Minimum Evaluation, Descending order,  Avail Freq,  Auto Start).

The zone of "Details" finds itself to the right and in vertical format instead of being in the bottom in horizontal (global view).

The toolbar is the same as in "Global View".

The indicators of the devices are not all presents because the detail of the Frequencies and the Intermodulations makes their presence unnecessary.

An additional column, "Comment", allows adding information. In the case of devices with Fixed frequencies, the channel number is displayed (CH-02 for example).

The "Intermodulation" column displays the details of intermodulation and mouse can identify the source of these frequencies:

**Section 1**

**#1 - BTR-800 A2 RX 4 Freq (2 Avail)**

No	Description	Frequency	Intermodulation	Comment
1		632.100 41		
2		632.400 41		
3		632.850 41	25 kHz - 638.000 & 641.250 & 646.425	
4		633.450 41		

**#1 - Shure UHF-R L3 8 Freq (21 Avail)** TV

1		638.000 41	25 kHz - 632.850 & 641.250 & 646.425	
2		638.350 42		
3		638.850 42		
4		639.500 42		
5		640.300 42		
6		641.250 42	25 kHz - 632.850 & 638.000 & 646.425	
7		641.950 42		
8		646.425	25 kHz - 632.850 & 638.000 & 641.250	

632.850: #1 - BTR-800 A2 RX  
 641.250: #1 - Shure UHF-R L3  
 646.425: #1 - Shure UHF-R L3

The "Comment" column shows the channel number of Lectrosonics devices:

**#1 - IFB Lectrosonics T4-R1a, Block 25 4 Freq (5 Avail)**

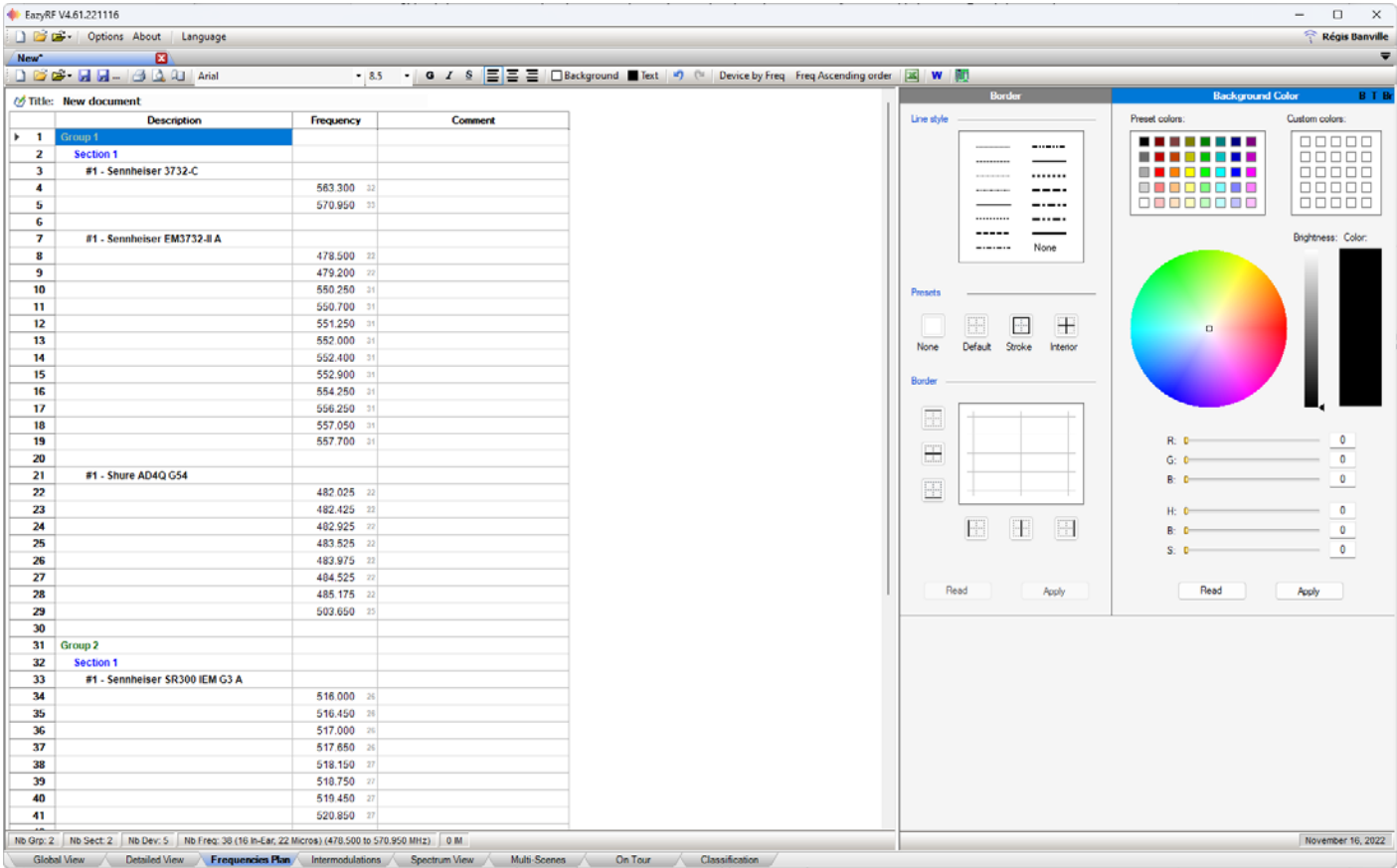
1		647.600 43		Ch 4C
2		649.300 43		Ch 5D
3		650.600 44		Ch 6A
4		653.400 44		Ch 86

The editor of devices is called by double-clicking on the title area of the device.

The Global view allows to have an overall view of devices whereas the Detailed view allows to see better frequencies of devices.

## 20 - Frequencies Plan

View "Frequencies Plan" shows the data but does not allow editing of frequencies. It lets you customize the presentation (color, type characters, size ...):



The Toolbar is adapted to the edition of the shape of the text, text color and background color:



The editor allows to add borders:

#1 - Shure UHF-R J5		
	578.000	31
	578.300	32
	578.700	32
	579.200	32
	579.550	32
	580.000	32
	580.550	32
	582.150	32

The editor has the usual commands "Undo" and "Redo".

The column width can be changed.

The devices can be classified by order of frequency with the command: "Device By Freq"

	Description	Frequency	Comment
1	#1 - Sennheiser 3732-A		
2		470.000	
3		470.300	14
4		470.700	14
5		471.200	14
6		471.550	14
7		472.000	14
8		472.550	14
9		474.150	14
10		474.900	14
11		482.500	16
12		483.100	16
13		484.150	16
14	#1 - BTR-800 A2 TX		
15		518.500	22
16		518.800	22
17	#1 - Sennheiser 3732-C		
18		548.500	27
19		548.800	27
20	#1 - Shure UHF-R J5		
21		578.000	31
22		578.300	32
23		578.700	32
24		579.200	32
25		579.550	32
26		580.000	32
27		580.550	32
28		582.150	32
29	#1 - BTR-800 A2 RX		
30		632.100	41
31		632.400	41
32		632.800	41
33		633.300	41

The frequencies can be classified in ascending order with the command "Freq. Ascending order"

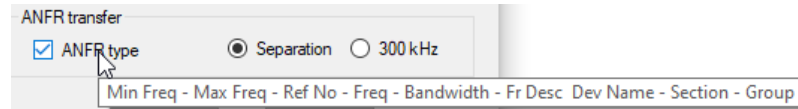
	Description	Frequency	Comment
1		470.000	#1 - Sennheiser 3732-A - Section 1
2		470.300	14 #1 - Sennheiser 3732-A - Section 1
3		470.700	14 #1 - Sennheiser 3732-A - Section 1
4		471.200	14 #1 - Sennheiser 3732-A - Section 1
5		471.550	14 #1 - Sennheiser 3732-A - Section 1
6		472.000	14 #1 - Sennheiser 3732-A - Section 1
7		472.550	14 #1 - Sennheiser 3732-A - Section 1
8		474.150	14 #1 - Sennheiser 3732-A - Section 1
9		474.900	14 #1 - Sennheiser 3732-A - Section 1
10		482.500	16 #1 - Sennheiser 3732-A - Section 1
11		483.450	16 #1 - Sennheiser 3732-A - Section 1
12		484.550	16 #1 - Sennheiser 3732-A - Section 1
13		518.500	22 #1 - BTR-800 A2 TX - Section 1
14		518.800	22 #1 - BTR-800 A2 TX - Section 1
15		548.500	27 #1 - Sennheiser 3732-C - Section 1
16		548.800	27 #1 - Sennheiser 3732-C - Section 1
17		578.500	32 #1 - Shure UHF-R J5 - Section 1
18		578.800	32 #1 - Shure UHF-R J5 - Section 1
19		579.200	32 #1 - Shure UHF-R J5 - Section 1
20		579.700	32 #1 - Shure UHF-R J5 - Section 1
21		580.050	32 #1 - Shure UHF-R J5 - Section 1
22		580.500	32 #1 - Shure UHF-R J5 - Section 1
23		581.050	32 #1 - Shure UHF-R J5 - Section 1
24		582.650	32 #1 - Shure UHF-R J5 - Section 1
25		632.100	41 #1 - BTR-800 A2 RX - Section 1
26		632.400	41 #1 - BTR-800 A2 RX - Section 1
27		632.800	41 #1 - BTR-800 A2 RX - Section 1
28		633.300	41 #1 - BTR-800 A2 RX - Section 1

## 20.1 Transfer to Excel

EazyRF allows you to export data to an Excel spreadsheet:

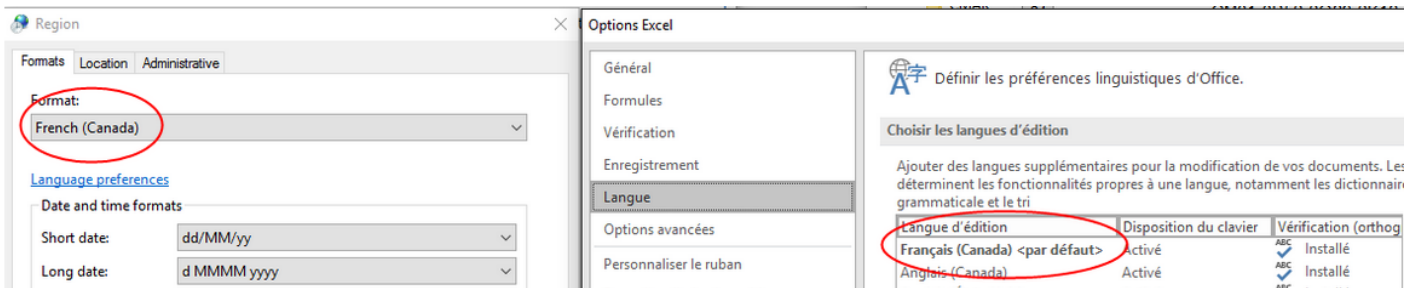
Simply choose the workbook, the worksheet and the destination cell.

If the frequencies are listed in ascending order, the data can be transferred to Excel in a format compatible with the ANRF's Frequencies Blockchain:



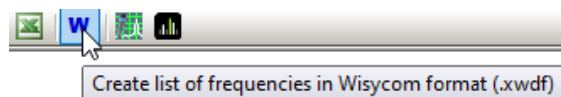
See <https://www.anfr.fr/l-anfr/politique-dinnovation/blockchain-des-frequences/> for more information.

In order for the transfer to Excel to work properly, the same language module must be installed in Windows and Excel:



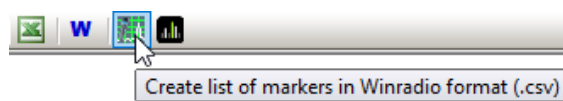
In addition, Excel must be started in administrator mode (shortcut settings, advanced). For a document to be visible, it must be opened directly by Excel and not by double clicking in File Explorer.

## 20.2 Transfer to Wisycom Manager



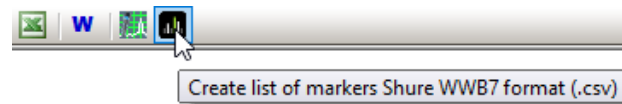
And as in Global View, you can transfer frequencies to Wisycom Manager, see chapter 16.

## 20.3 Create list of markers for WinRadio



This function allows you to save the list of frequencies in ascending order in csv format to be used as markers in WinRadio; csv format: ID,Frequency,Name,Colour. The background color of the frequency cells is used as the color for the markers.

## 20.4 Create list of markers for Shure WWB7



A list of frequencies in ascending order in csv format can also be created to be used as markers for the Shure Wireless Workbench 7.

## 20.5 View detachment to a window (2<sup>nd</sup> screen)

The "Frequencies Plan" view can be detached from the EazyRF application towards a window on a 2nd screen or overlaid with EazyRF if a 2nd screen is not connected.

To activate this function, double-click on the name of the view:



The name of the view is displayed in red to indicate that it is detached:



To return to standard mode, either close the window or redo a double click on the name of the pane (in red).

The "Intermodulations", "Spectrum View" and "On Tour" views can also be detached.

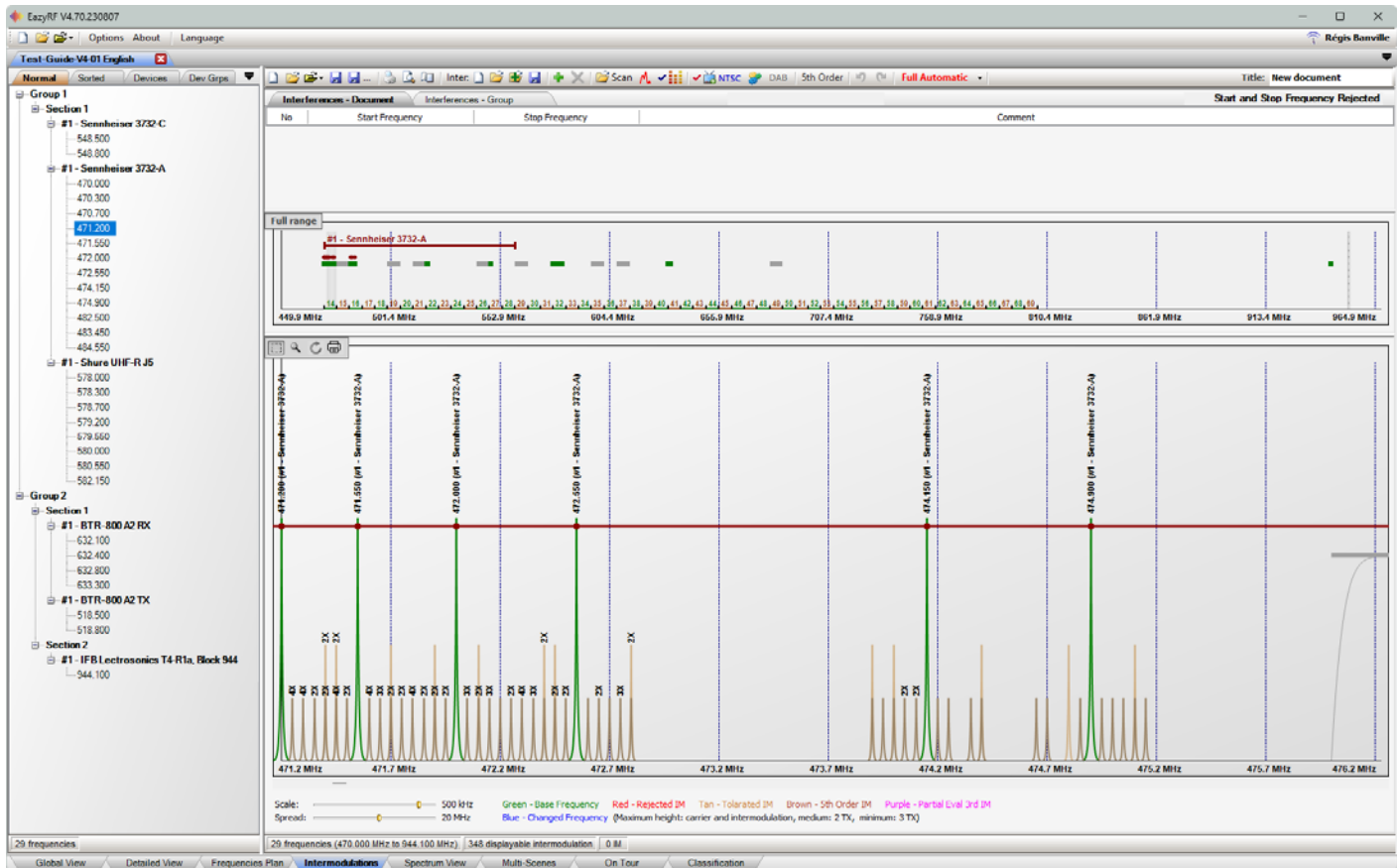
If more than one view is detached, a simple click on the name of the view will bring it to the foreground.

Obviously, the content of the detached views is synchronized with the changes made no matter where they are made.



## 21 - Intermodulations

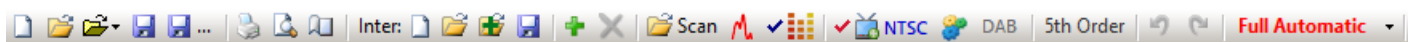
View "Intermodulation" displays the list of devices of the document with an overview of frequencies and a detailed view of frequencies and intermodulations:



The editor of devices can be called by double-clicking the name of a device or a frequency in the device list (left part of the view).

Areas of interference can be defined with the right mouse button.

### 21.1 Toolbar



The toolbar contains items already examined in global/detailed views: file management, printing, TV channels, local options, undo/redo commands and method of calculation.

Some additional items concern interferences which we shall see in the section 5.6.

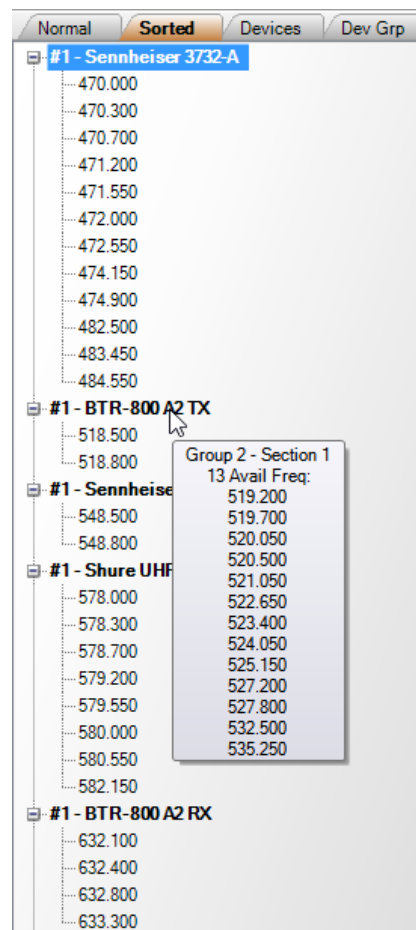
Finally, the title of the document can be found on the bar to get a little space (instead of in the document area).

## 21.2 Devices

The left part of the window consists of four components:



"Normal" pane displays the list of devices of the document in the order of global/detailed view. The "Sorted" section classifies devices in ascending order of frequency:



Information follow the mouse cursor: available frequencies, changes...

Tabs "Variables" and "Fixed" display the list of devices like the "Global View". It is thus allowed to add a device to the document:

The image displays two screenshots of a software interface, likely for managing radio frequency devices and their intermodulation products.

**Left Screenshot: Device List**

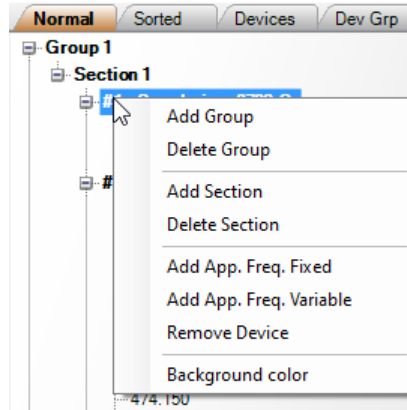
- Buttons: Normal, Sorted, **Devices**, Dev Grp
- Listed devices (selected item is **BTR-800 E88 RX**):
  - beyerdynamic TG 1000 A
  - beyerdynamic TG 1000 A #2
  - beyerdynamic TG 1000 B
  - beyerdynamic TG 1000 C
  - beyerdynamic TG 1000 D
  - beyerdynamic TG 1000 D P2
  - beyerdynamic TG 1000 E
  - BTR-800 A2 RX
  - BTR-800 A2 TX
  - BTR-800 A2 TX #2
  - BTR-800 A3 RX
  - BTR-800 A3 TX
  - BTR-800 A4 RX
  - BTR-800 A4 TX
  - BTR-800 B3 RX
  - BTR-800 B3 TX
  - BTR-800 B4 RX
  - BTR-800 B4 TX
  - BTR-800 B6 RX
  - BTR-800 B6 TX
  - BTR-800 C3 RX
  - BTR-800 C3 TX
  - BTR-800 C4 RX
  - BTR-800 C4 TX
  - BTR-800 C6 RX
  - BTR-800 C6 TX
  - BTR-800 E88 RX**
  - BTR-800 E88 TX
  - BTR-800 F1 RX
  - BTR-800 F1 TX
  - BTR-800 F2 RX
  - BTR-800 F2 TX
  - BTR-800 F3 RX
  - BTR-800 F3 TX
  - BTR-800 F4 RX
  - BTR-800 F4 TX
  - BTR-800 H1 RX
  - BTR-800 H1 TX
  - BTR-800 H2 RX
  - BTR-800 H2 TX
- Details pane (bottom):
 

<b>Var Device</b>	BTR-800 E88 RX
Based on	Basic model
Type	BTR-800
Nb Freq Simult	4
Tolerance 2 TX	100
Tolerance 3 TX	50
Separation	300
Start	470.100
Stop	487.900
- Status: 558 Devices

**Right Screenshot: Device Groups List**

- Buttons: Normal, Sorted, Devices, **Dev Grp**
- Listed device groups (selected item is **(2) BTR-800 A2**):
  - (2) BTR-800 A2
  - (2) BTR-800 A3
  - (2) BTR-800 A4
  - (2) BTR-800 B3
  - (2) BTR-800 B4
  - (2) BTR-800 B6
  - (2) BTR-800 C3
  - (2) BTR-800 C4
  - (2) BTR-800 C6
  - (2) BTR-800 E88
  - (4) Théâtre ABC
- Details pane (bottom):
  - BTR-800 A2 RX
    - BTR-800
    - 632.100-649.900 MHz
    - 4 Freq
  - BTR-800 A2 TX
    - BTR-800
    - 518.100-535.900 MHz
    - 2 Freq
- Status: 11 Devices Groups

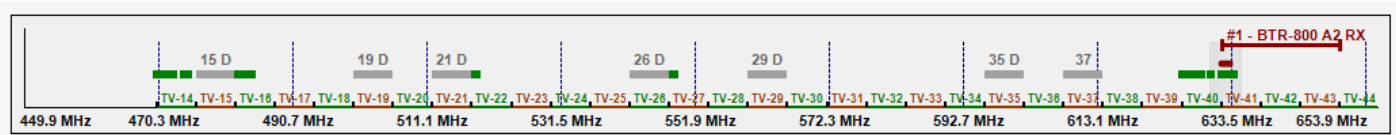
In the details pane "Normal" the following menu appears by clicking the right mouse button:



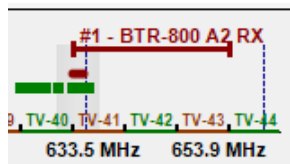
It is thus possible to manage groups, sections, and devices as in the global and detailed views so avoiding moving from a window to the other one. This operation is not possible in the component "Sorted".

### 21.3 Global Frequencies

The overall representation of the frequency spectrum occupied by the document is displayed in the right middle section:

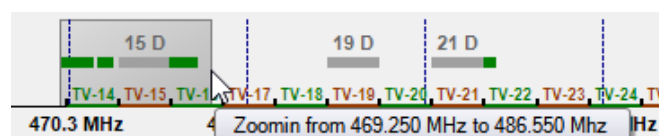


The selected device is displayed by its name and the space occupied by the Start to Stop frequencies of the device:

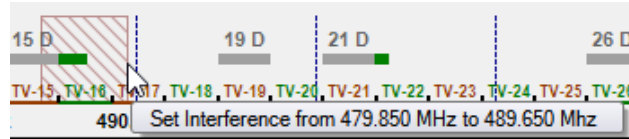


The zone in degraded grey represents the space occupied by the detailed section.

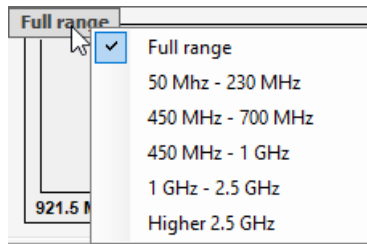
To view a section directly in detail, click on a point or draw the area to be enlarged with the left mouse button:



A zone of interferences takes shape when dragging with the right mouse button:

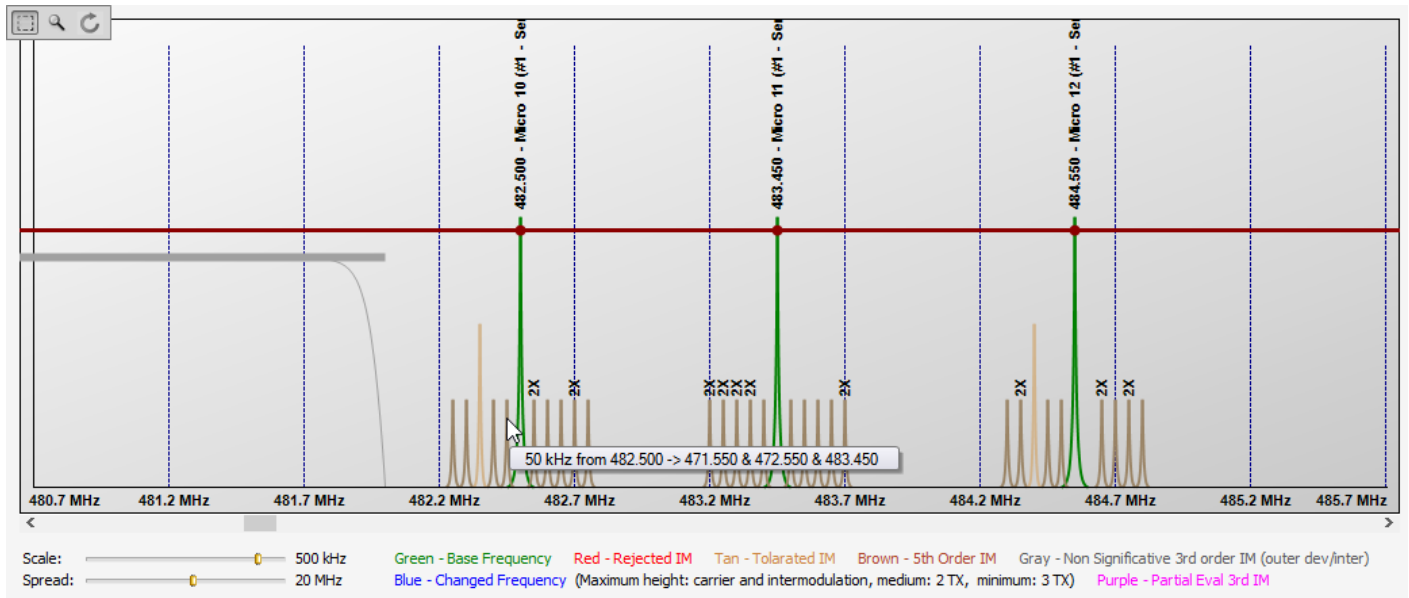


Finally, the "Full range" command allows you to enlarge the viewing area when frequencies in MHz and GHz are used:

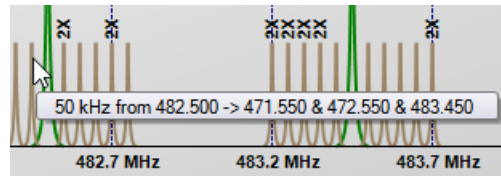


### 21.4 Detailed Frequencies

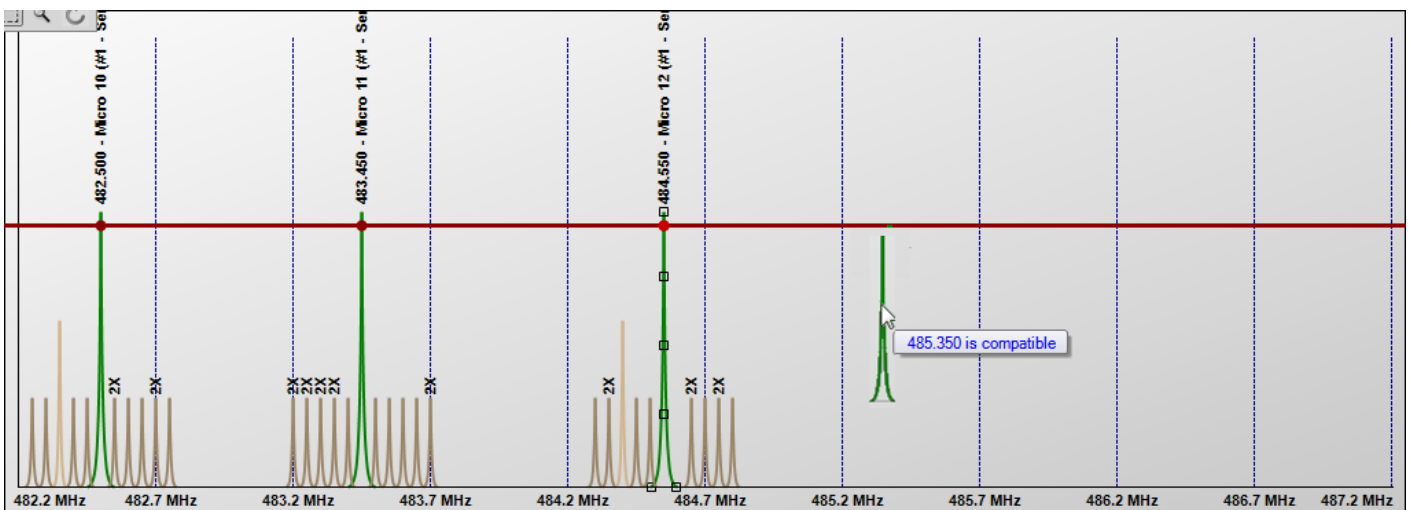
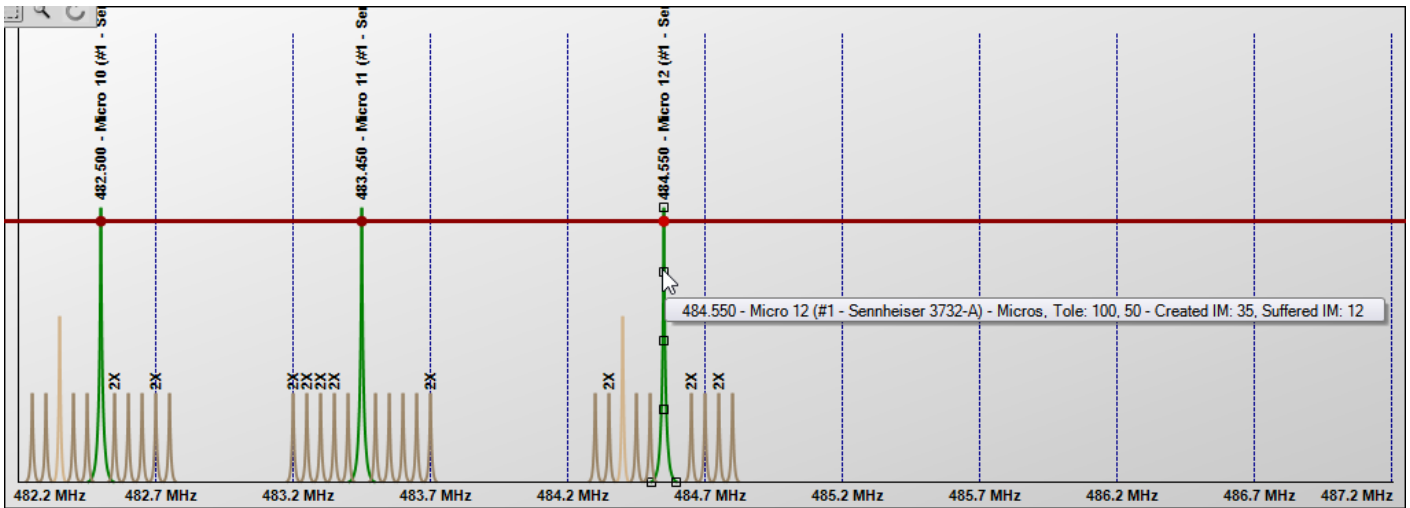
The detailed zone shows a section of the global zone with the graphic representation of the frequencies and the intermodulations:

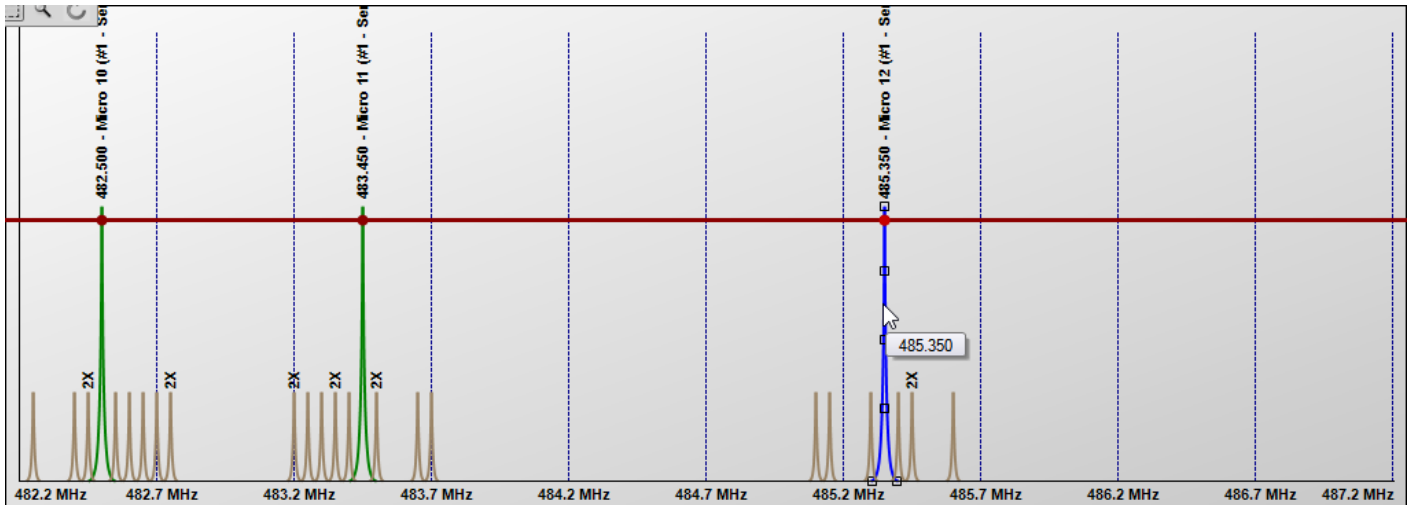


The mouse cursor shows the detail of every intermodulation:

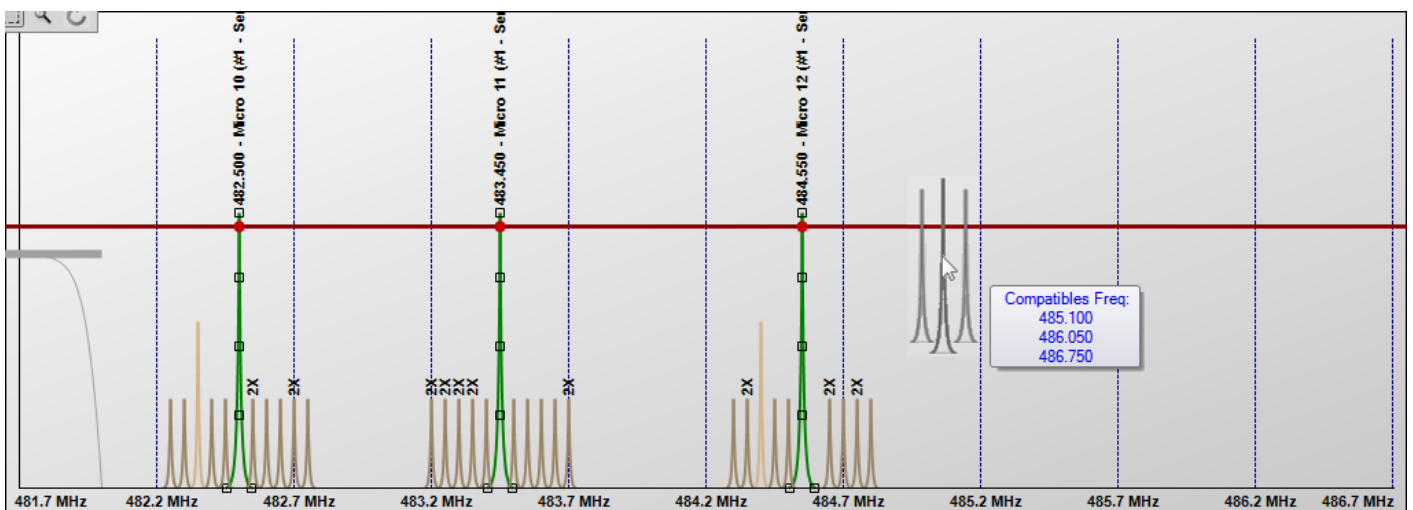
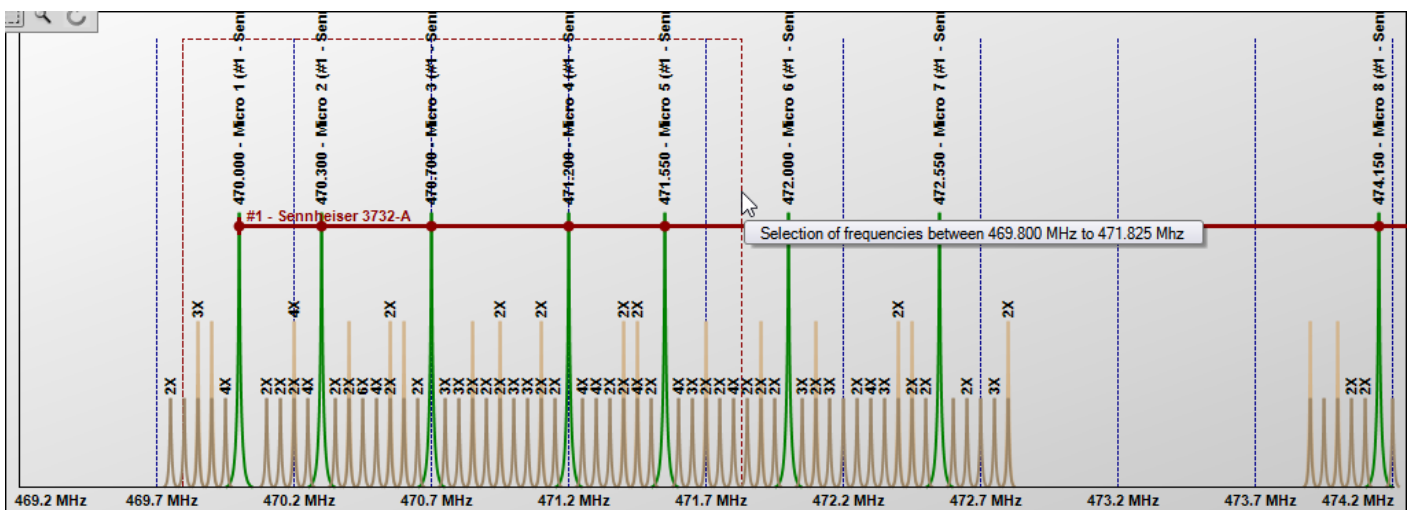


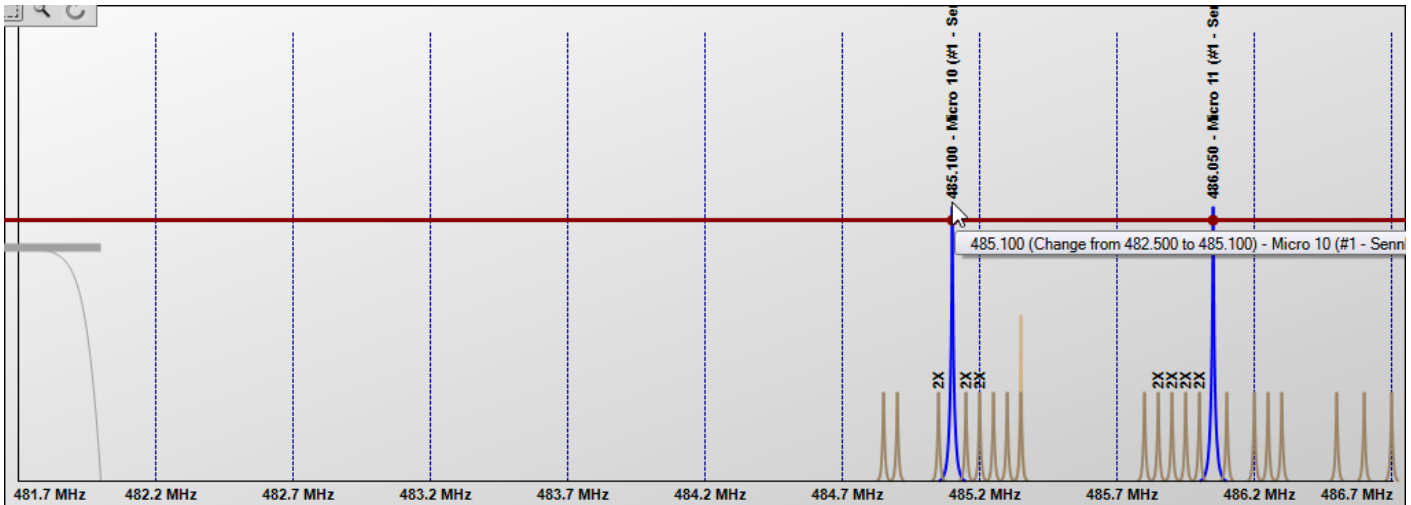
From this zone, the frequencies can be selected and moved:





A group of frequencies can be also selected and moved by dragging the mouse or by selecting the frequencies one by one by holding the touch Ctrl between every selection:





The commands:

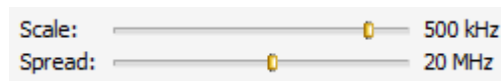


The first two allow you to make either a selection or an enlargement in the detailed area. The third command recalculates the intermodulations and refreshes the display.

Finally the last command displays the spectrum management module 470-614 MHz for the ATSC video standard and the 470-694 MHz spectrum for the SECAM video standard. See section 5.10 for more information.

### 21.5 Scale and Spread

The bottom of the detailed zone possesses two controls:



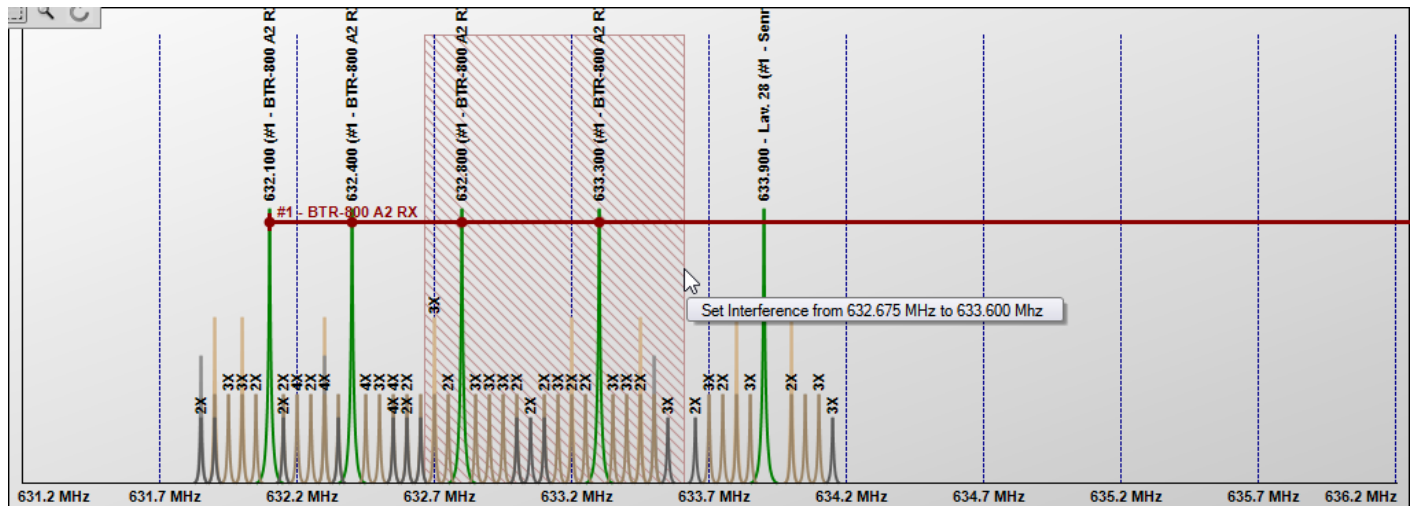
The control "Scale" allows to enlarge or to decrease the detailed vision of the frequencies. Beyond 5 MHz between two steps, there is not enough space to draw adequately the frequencies and the intermodulations. Thus only a block represents every frequency.

The control "Spread" allows to increase/decrease the area added to the overall spectrum size.

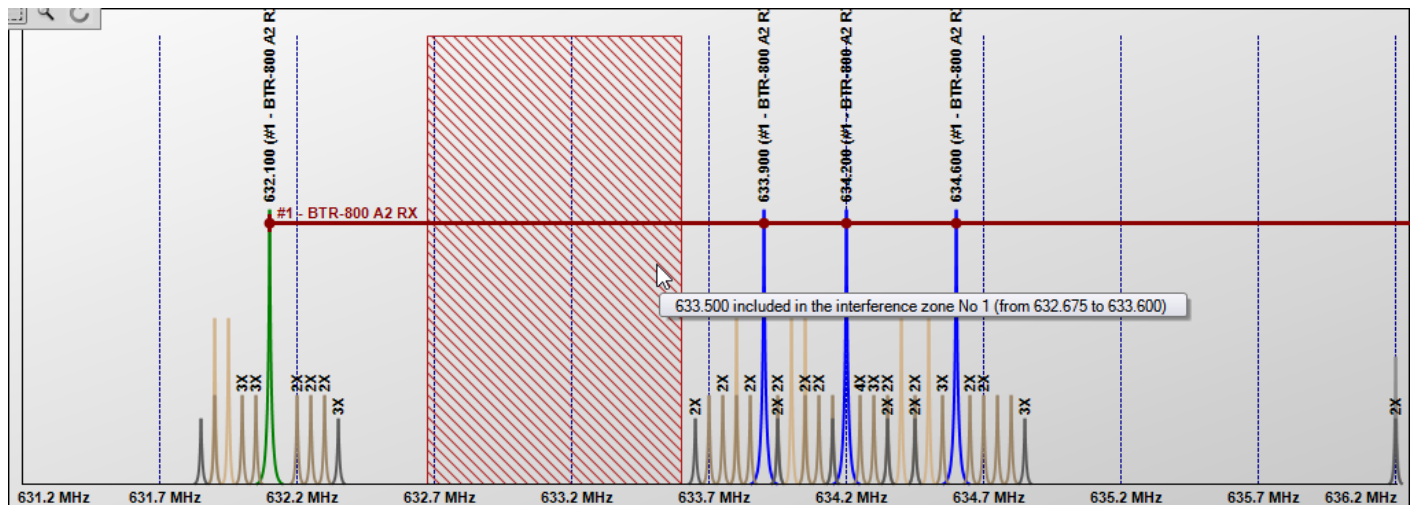
### 21.6 Interferences

An interference region is a region of the spectrum excluded when allocating frequencies. So if unwanted modulations are observed, we can define an area not to assign frequencies in it. This is an area, so there is no evaluation of intermodulation, only a rejection of frequencies.

To create an interference area, use the right mouse button and hold it down by enlarging the area:



In this case, this operation causes the recalculation of frequencies (full automatic mode):




This can be done in the overall frequency range or in the detail area.

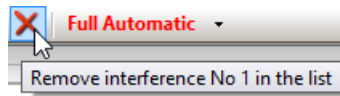
The upper right part of the window displays detailed interference:

Interferences - Document		Interferences - Group		1 interference		Start and Stop Frequency Rejected
No	Start Frequency	Stop Frequency			Comment	
1	632.675	633.600				

The Start and Stop frequencies can be changed directly.

To add interference manually, use . You can enter a sequence of values (without evaluation between each data) by using the "+" key on the numeric keypad or the "+ / =" key on a standard keyboard.

To delete an area, select it from the list and use the tool:

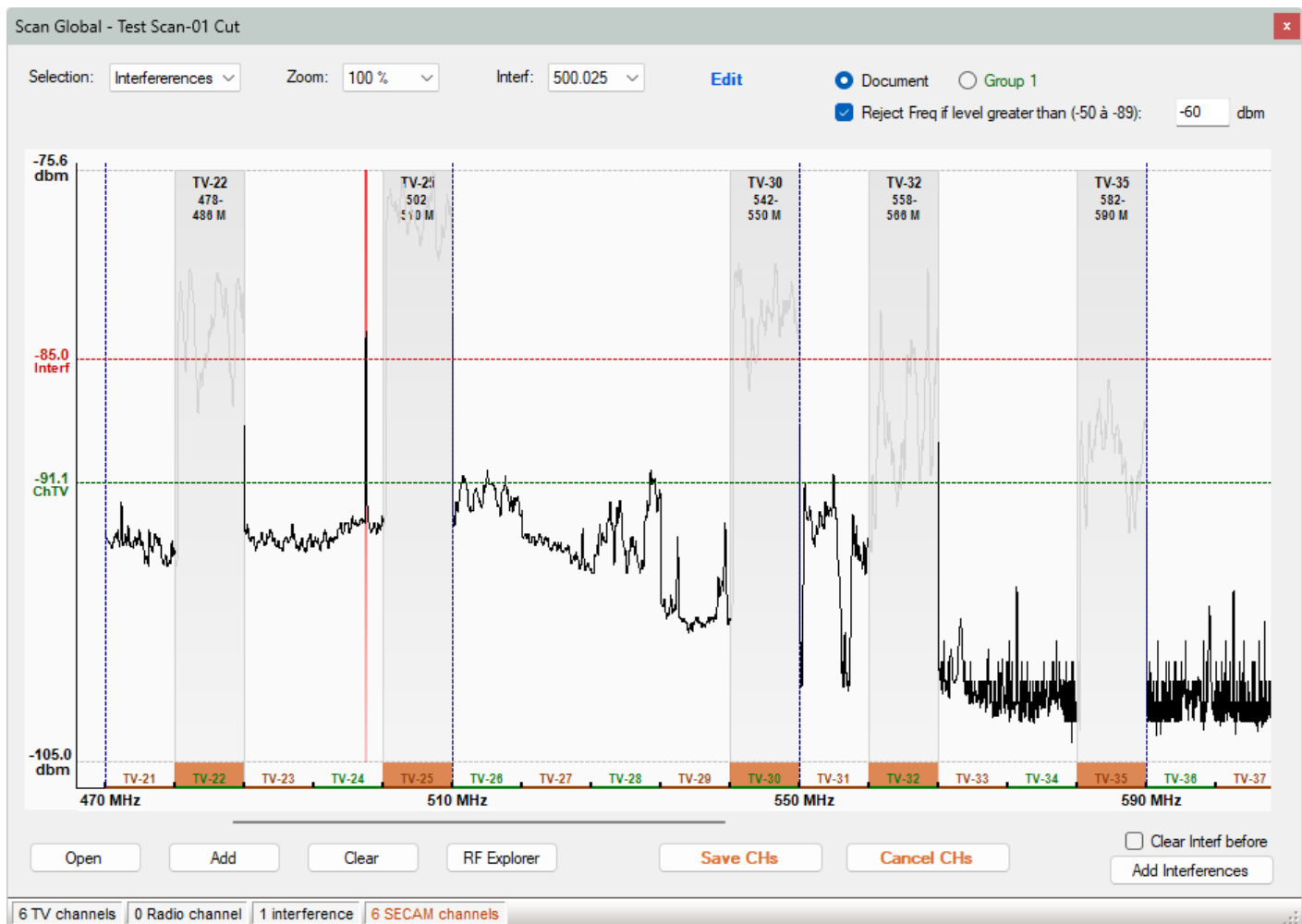


These interferences can be saved and retrieved later from the toolbar:



The command  allows to add a file to the existing list while the open command erases the data previously.

The "Scan" command can be used to import interference from a file created by a frequency scanner:

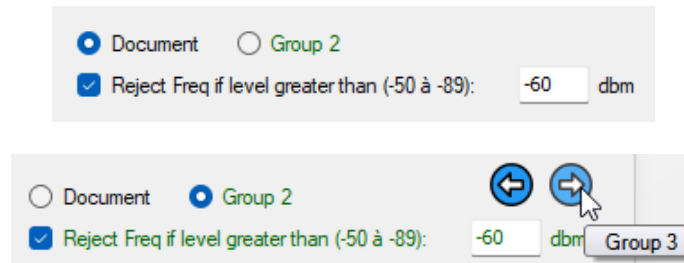


The "Add" command does not erase the data before opening a file. The "Delete" command is used to destroy the data. The data is saved with the document, so if it is no longer needed, it should be deleted.

The command "RF Explorer" allows to read the data directly from the RF Explorer scanner. See section 5.6.2 for operation.

The "Edit" command allows modification of the sample data, see section 5.6.1 for more details.

Since version 4.70 of EazyRF, samples can be added to each group and are managed by:



If a scan file is assigned to a group, it takes priority over the document scan file, so a group without a sample file uses the document file.

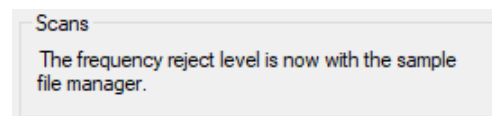
The next/previous buttons allow you to travel from one group to another without leaving the editor.

The activation of the "Reject Frequencies if level" and the detection level are now accessible by this module instead of the module "Document parameters" in order to manage the document and the groups.

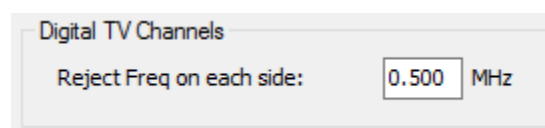
The frequency rejection level is adjusted separately for each group and for the document.

Enabling or disabling TV channels affects document and groups. If the Document/Group selector is assigned to groups, only the channels belonging to the group can be modified. Always save TV channel changes.

The detection threshold of frequency reject according to scan level has been removed from the "Document options":



The interference detection is done in accordance with the exclusion zone on each side of a TV channel, depending on the parameter of the document:



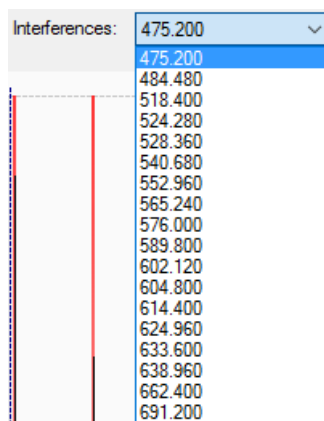
Two lines (red and green) can be used to adjust the interference detection threshold (red), while the green adjusts the threshold for detecting the TV channels. To move the lines, it is necessary to drag the indicator text of the level:



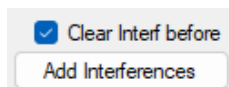
An interference can be deselected by clicking on the red vertical line. To add one manually, click on a line of the graph.

Two selection modes exist, either the selection of interferences or TV channels. The first command at the top of the window allows you to change the mode. The sampling values included in the selected TV channels are excluded from the interference detection.

To navigate directly to an interference value, make a selection from the drop-down list at the top of the window to the right:



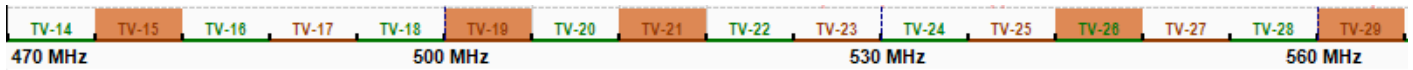
Finally, after making the desired choice, finish with the command "Add Interference" to insert the data in the current list. You can clear the list before copying the interferences:



The interferences are added to the document or to the group according to the "Document / Group" selection:

Interferences - Document		Interferences - Group		9 interferences	Start and Stop Frequency Rejected
No	Start Frequency	Stop Frequency		Comment	
1	500.025	500.025			
2	532.825	532.825			
3	533.075	533.075			
4	533.275	533.275			
5	533.325	533.325			

The TV channels of the document are displayed in orange:




TV channels can be selected or not by clicking on the channel no. After making changes to the document channels, the "Save CHs" command becomes accessible. You must save the changes before leaving the editor.

The selection of TV channels for interference detection is different from that of TV channels in the document and is not linked. It is not done automatically because sampling does not necessarily cover the whole range.

The sampling data is shared with the Channel Scan module.

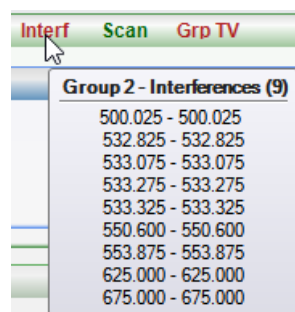
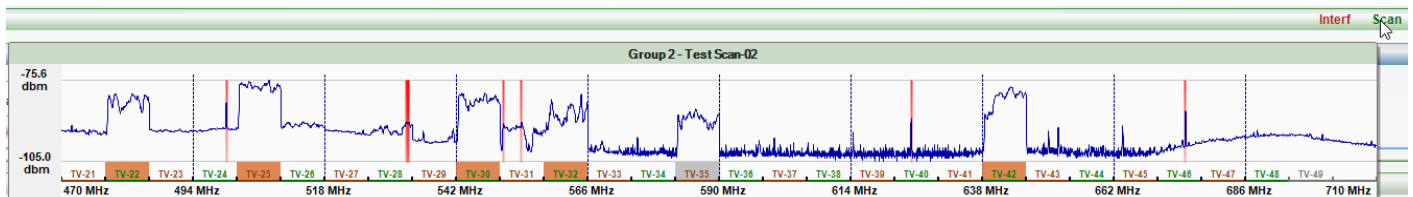
The data is also saved with the document. If they are no longer useful, it would be nice to erase them.

The sampling data can be superimposed on intermodulations with the tool .

Indicators on the header of the groups of the global and detailed views display the presence of TV channels, a sample file or an interference list for a group:

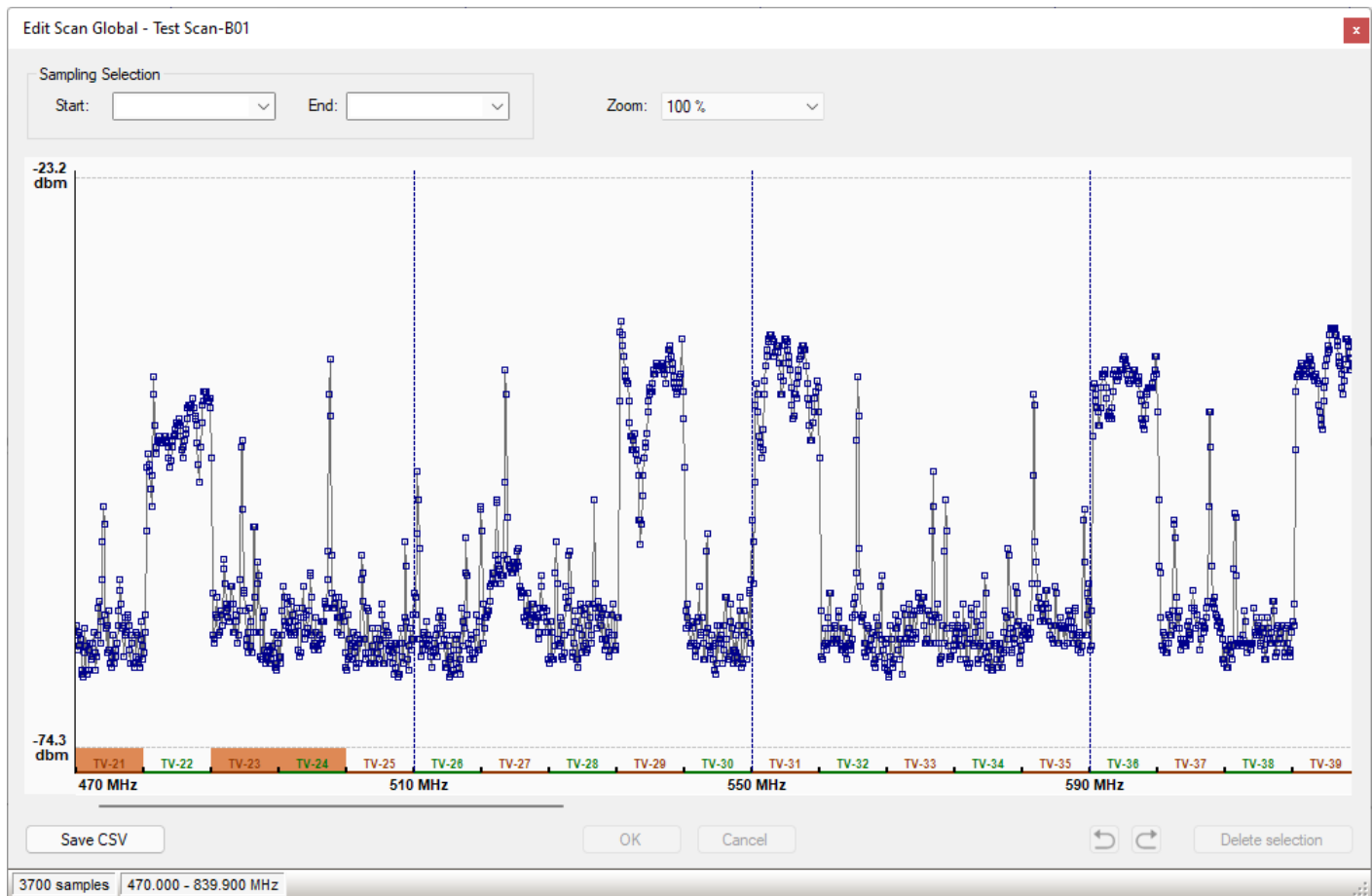


By positioning the mouse pointer over one of these indicators, the content is displayed:



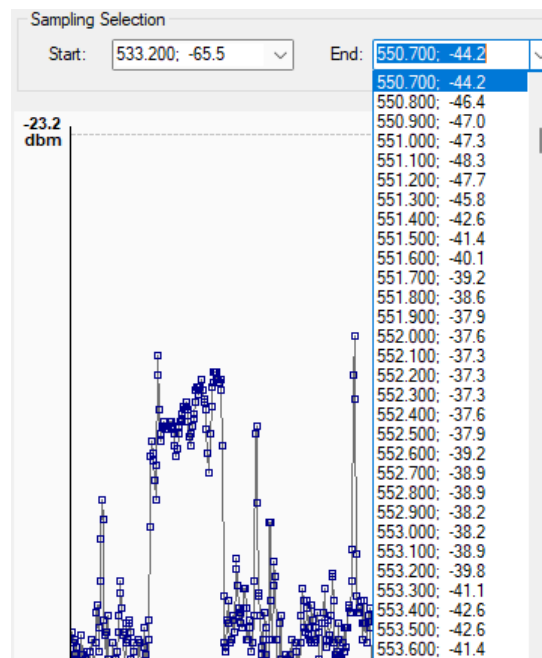
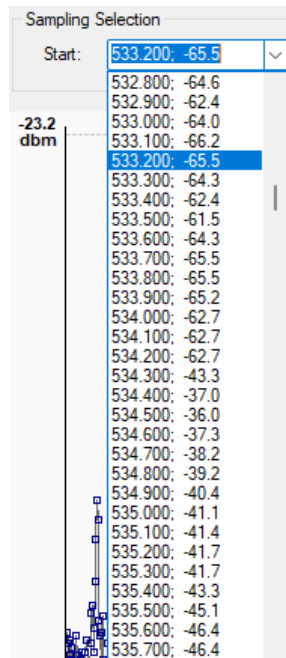
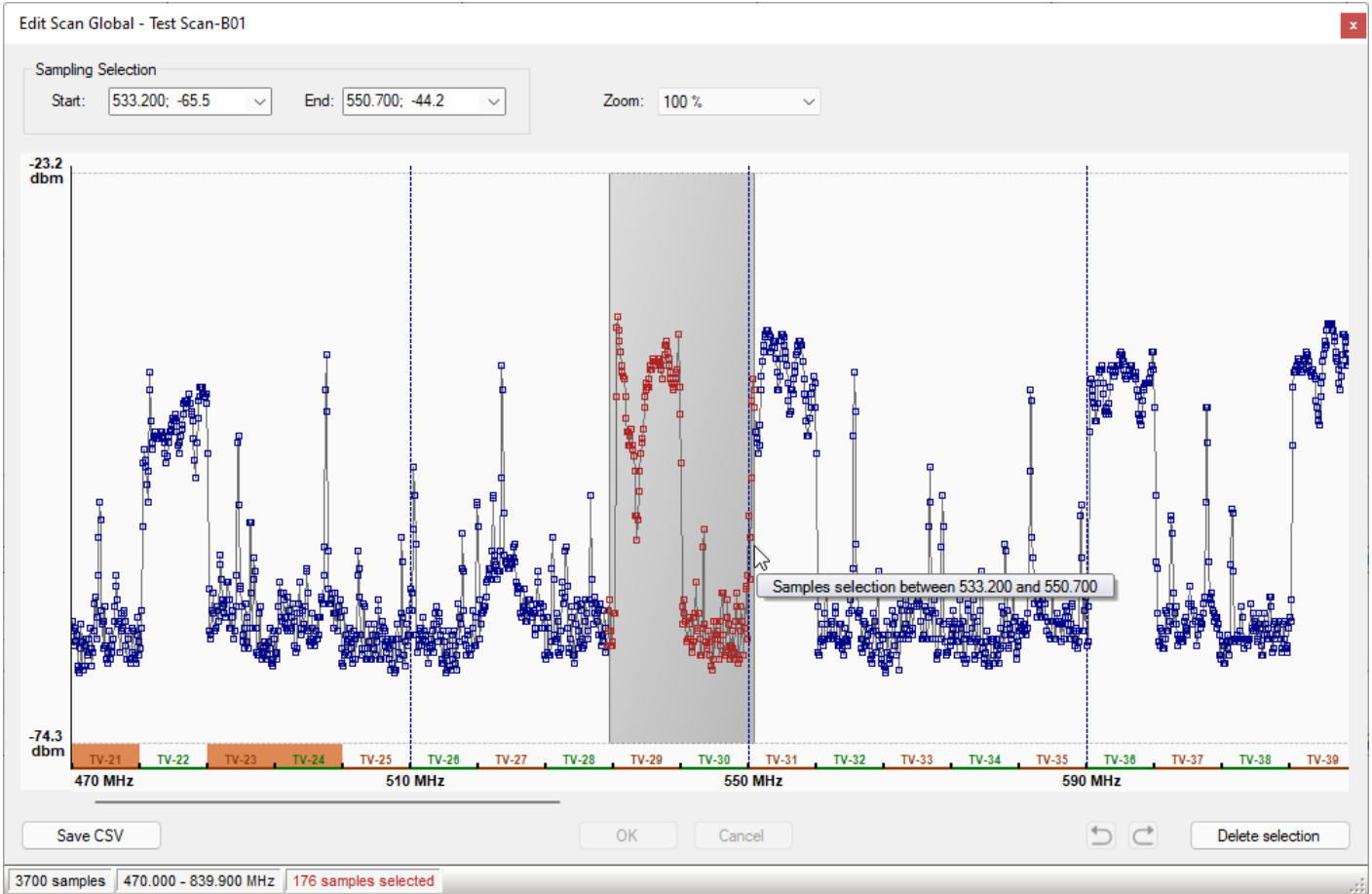
### 21.6.1 Sampling edition

The "Edit" command calls the sampling editor:

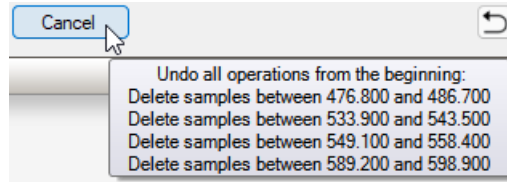


The lower information bar displays the total number of samples in the file, as well as the frequency range covered.

The editor allows you to select a region of the spectrum (or a single sample) and erase it. You can select a region by pressing the left mouse button on the starting frequency and dragging the mouse to the right to extend the selection. It goes without saying that it is not easy to a frequency precisely with the mouse (the zoom can help), but this is not important, because the drop-down lists for the start and end of the selection allow you select the desired frequencies:



The editor has its own undo/redo system, the "Undo" command allows you to undo a series of operations:

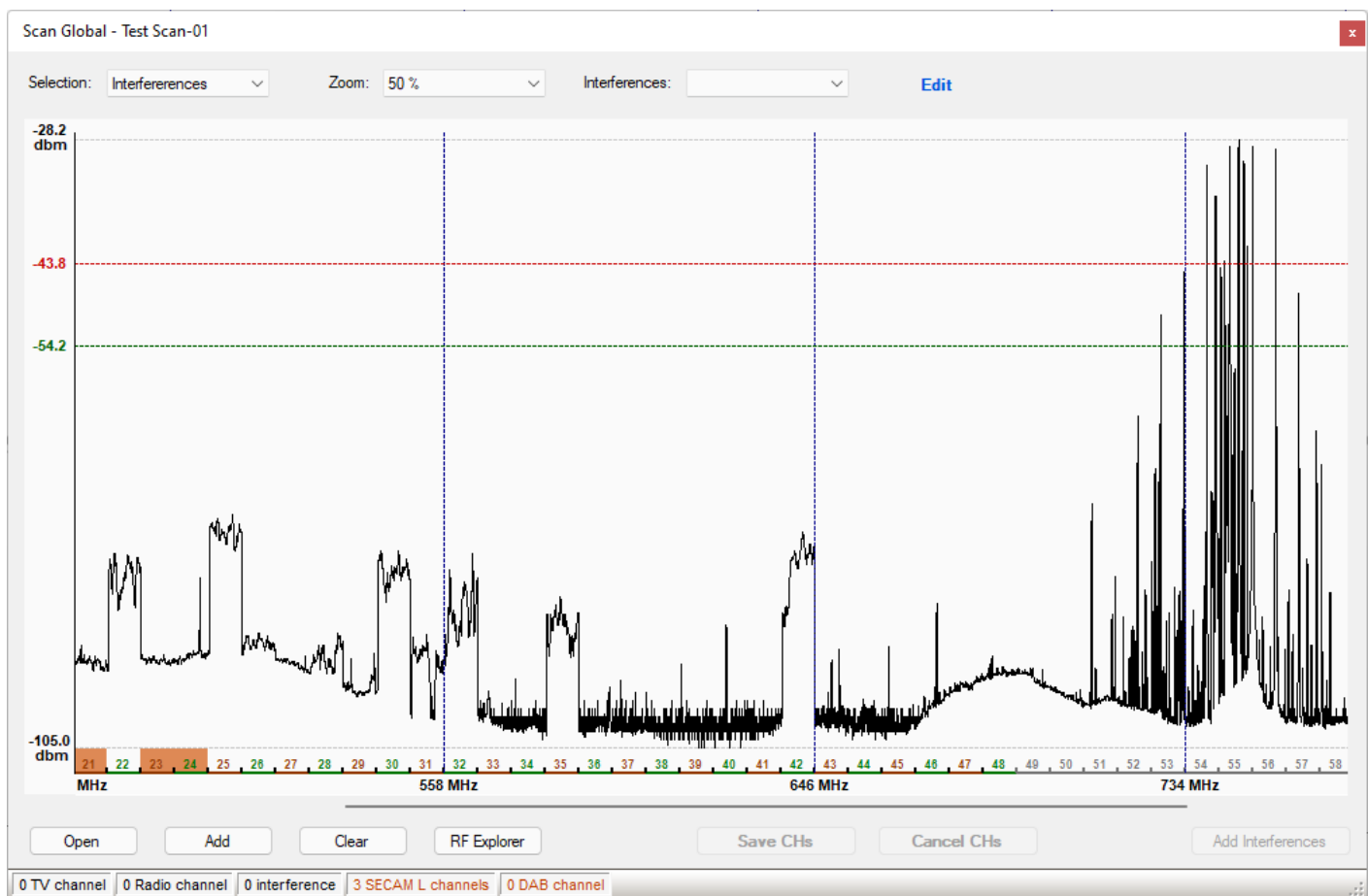


Changes can be undone until a new sample file is uploaded, regardless of changes made to the document.

The modified sample file can be saved separately, in EazyRF CSV format.

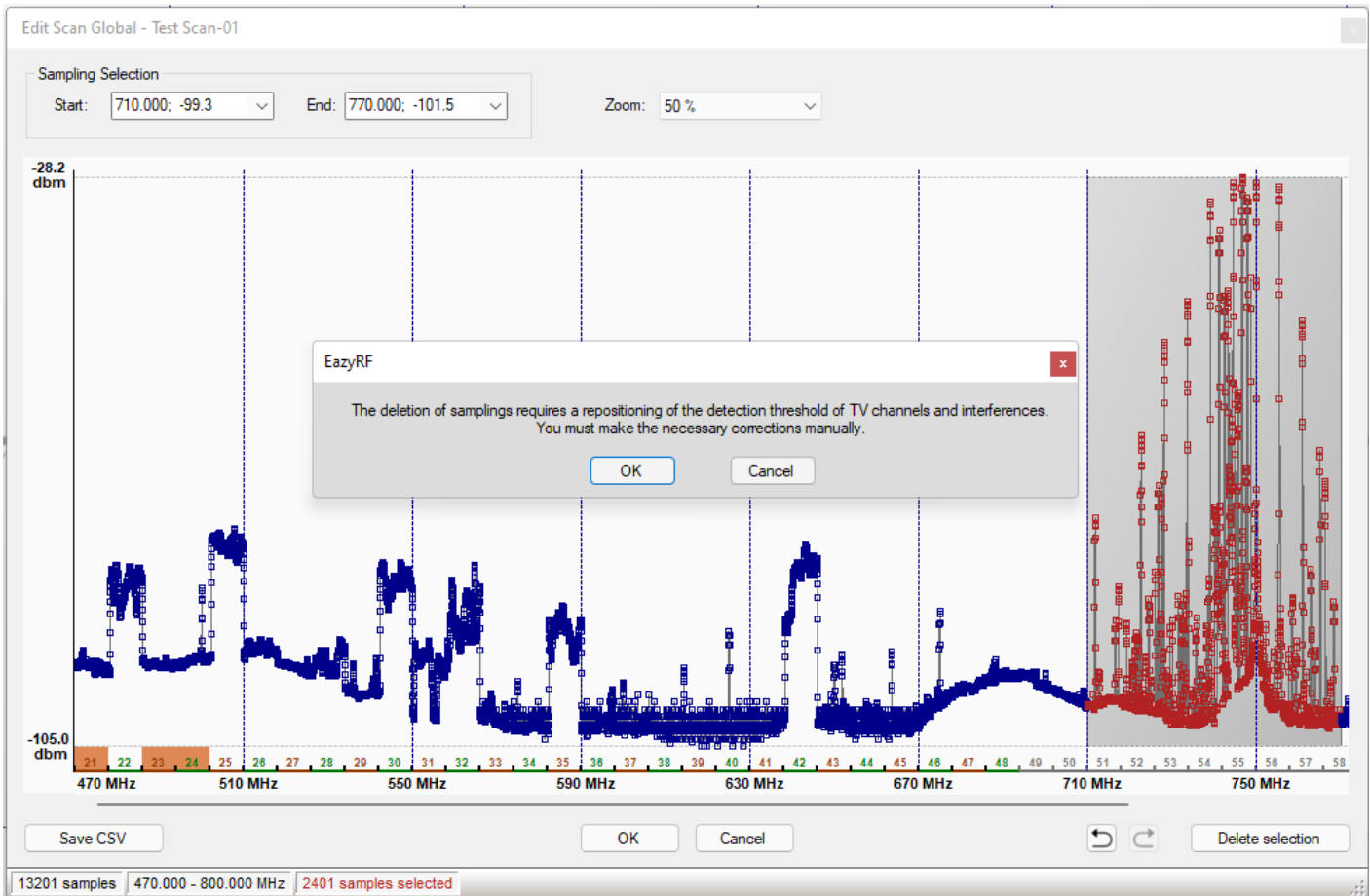
### Reminder:

EazyRF reads the sample files and finds the minimum and maximum sample value (as well as the minimum and maximum frequencies). There is no magnitude scale for the sample values, EazyRF automatically adjusts to give a full-scale view of the sample values. This can sometimes give unexpected results, let's take an example:

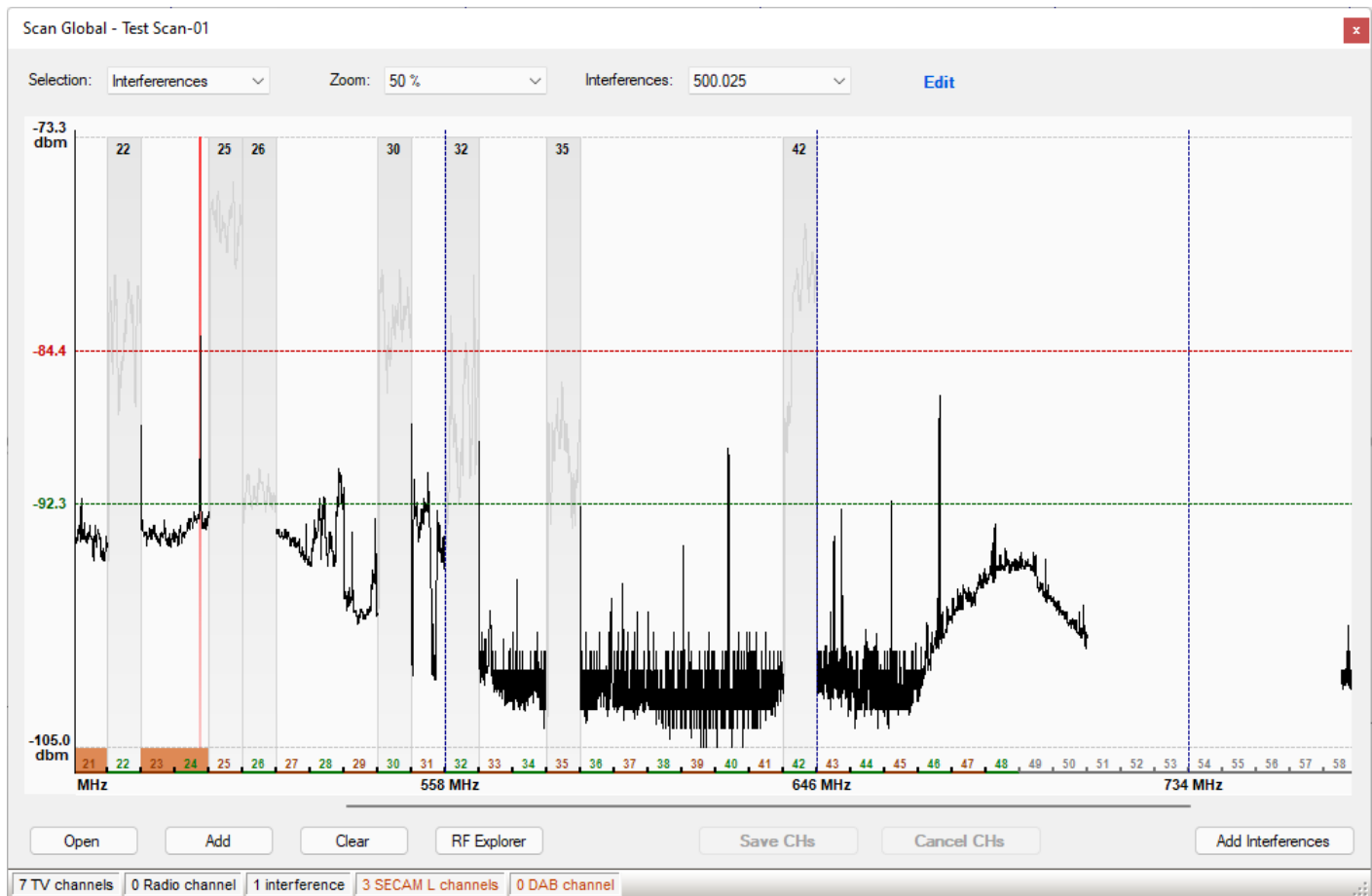


We see that there is a lot of activity in the 710 to 770 MHz range, as this part of the spectrum is no longer accessible for our needs, let's try to erase it to see the difference. Before proceeding, take note of the values for the maximum

level (-28.2 dbm), minimum level (-105.0 dbm), and interference detection (-43.8 dbm) and TV channel detection (-54.2 dbm) thresholds.



First of all, EazyRF advises us that this change will cause a repositioning of the detection thresholds of TV channels and interference. Let's look at the result to understand:



Minimum and maximum sampling values are now -105.0 and -73.3 dbm. It goes without saying that the old detection thresholds, i.e. -43.8 for interference and -54.2 for TV channels no longer make sense, they are higher than the new maximum value -73.3 dbm. In this case, EazyRF proposes values based on a percentage of the sampling extent, i.e. 40% for TV channels and 65% for interference.

This change in the scope of the sampling values is major, it goes without saying that such a modification in an already configured environment is not desirable. This is a change that must be made at the start of the configuration because all the frequency calculations of devices that depend on certain sampling levels will no longer have any meaning, or even worse, will be erroneous.

N.B. Sampling values in dbm or dbu do not really matter but should not be used together.

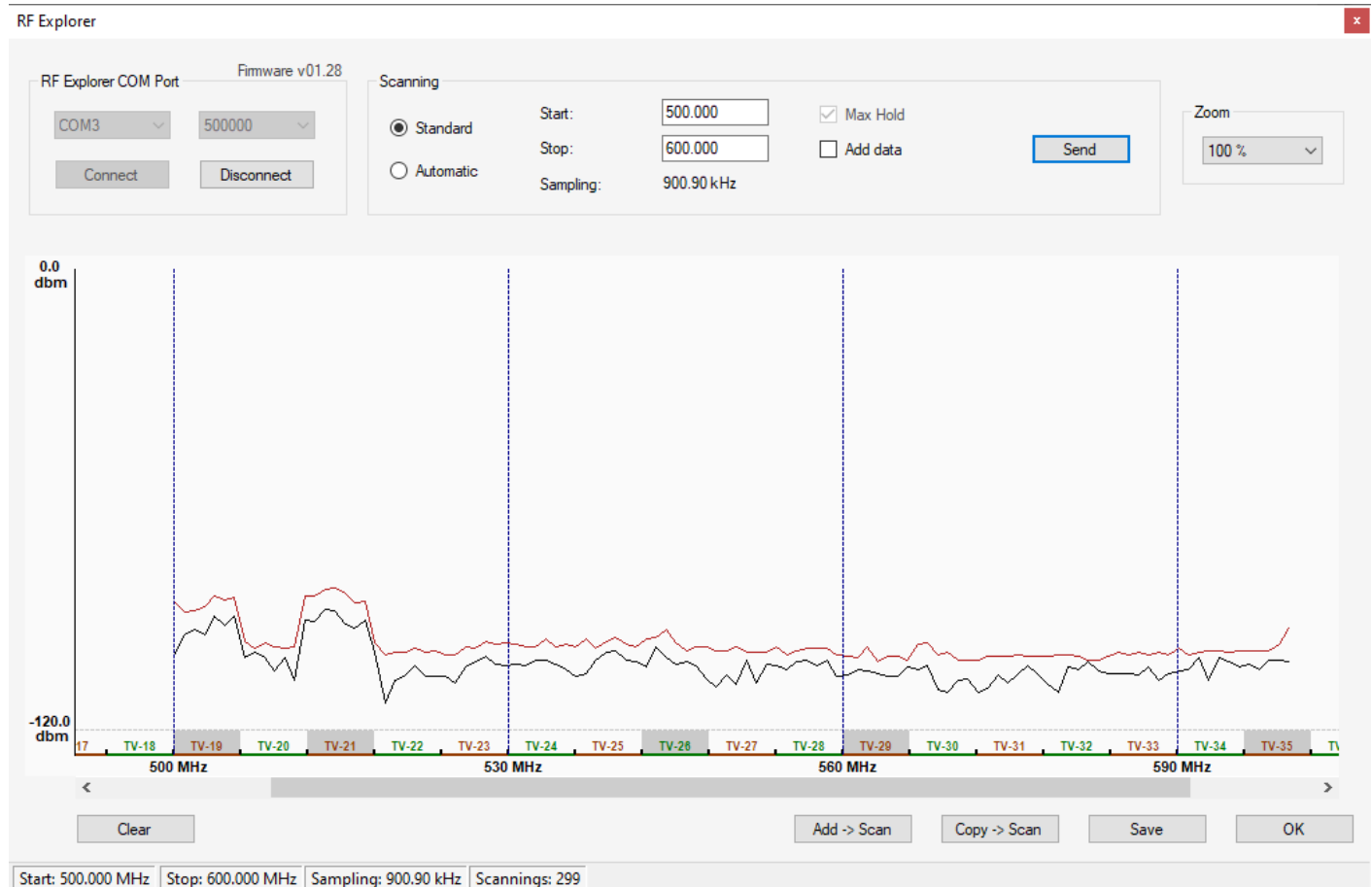
## 21.6.2 RF Explorer

The RF Explorer scanner can be managed by EazyRF. EazyRF can open .rfe files created by RF Explorer, as well as files exported in .csv format (single signal or cumulative).

The RF Explorer (or PLUS) do not allow managing a range of frequencies with precise sampling, only 112 samplings for a given range is allowed.

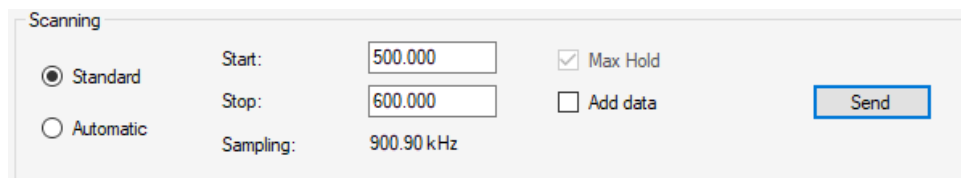
To overcome this constraint, EazyRF uses a public library to communicate with RF Explorer directly (RFExplorer-for-.NET). Thanks to the developers.

Here is this tool:



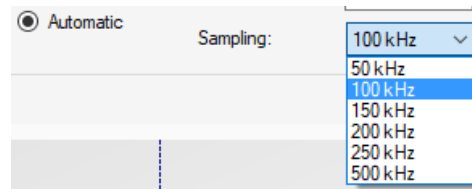
At launch, EazyRF automatically connects to the first RF Explorer connected to a USB port. The communication is done by serial port at the speed of 500000 bits / sec (not modifiable).

Two types of scanning exist:

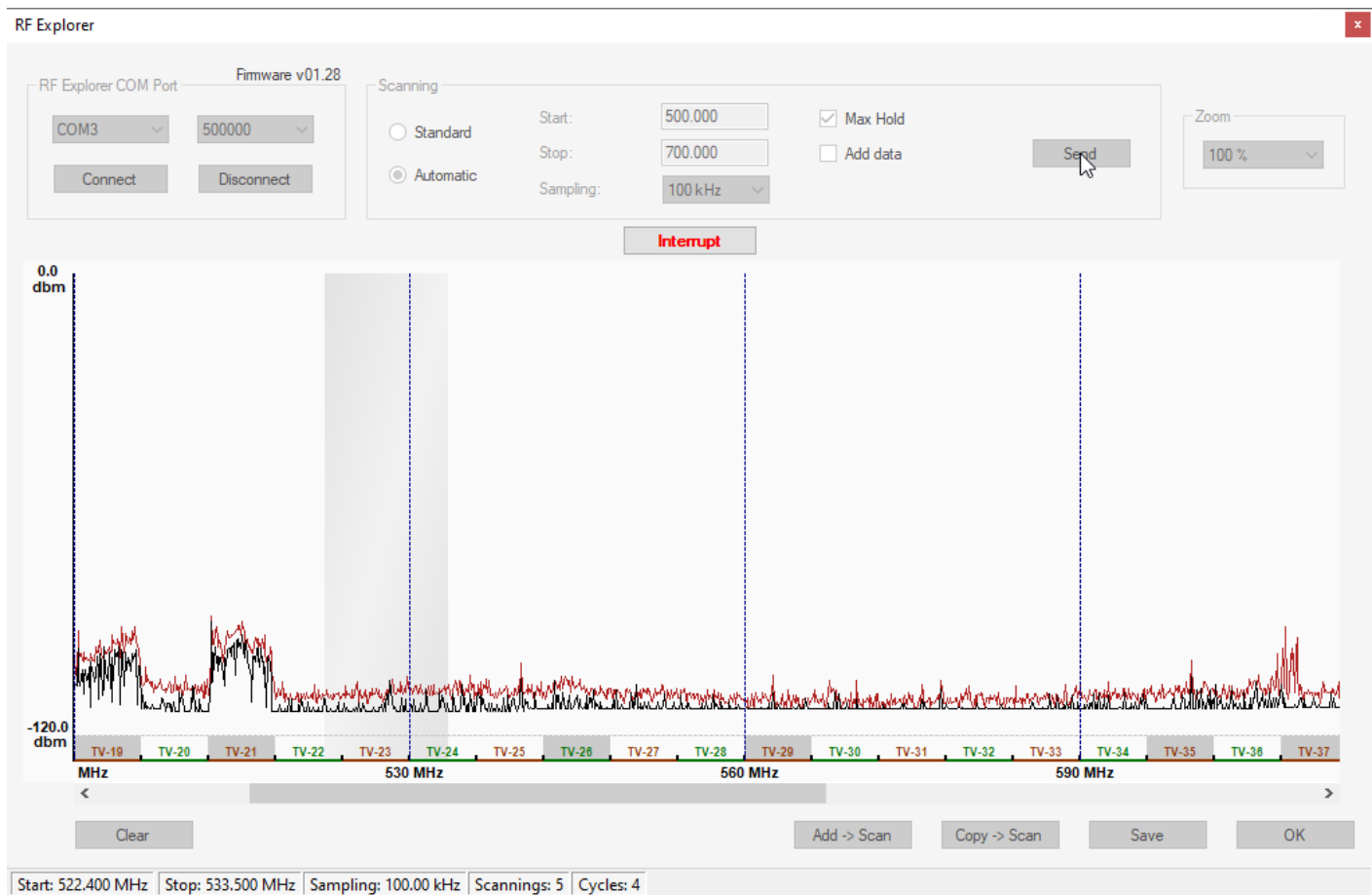


Standard scanning is the classic operating mode of the RF Explorer. A start and stop frequency are set and RF Explorer determines the sampling value. RF Explorer uses 112 samplings over the defined frequency range. In fact, it is 111 steps, so for a range of 100 MHz, we obtain a sampling of 900.90 kHz.

This is not a sufficient precision. EazyRF has therefore created an automatic mode of operation to define the sampling:



From the "Start" and "Stop" values, EazyRF reprograms RF Explorer in frequency intervals to obtain the desired result. Therefore, for a 500 MHz to 700 MHz scan at 100 kHz sampling, RF Explorer must be reprogrammed 18 times, from 500.000 MHz to 511.100 MHz for a first reading, then from 511.200 MHz to 522.300 MHz, and so on. The result:



After having defined the sampling frequencies, it is necessary to launch the operation by the command "Send".

EazyRF is monopolized by this operation and you must terminate it with the "Interrupt" command:

Interrupt

At this moment, you get:



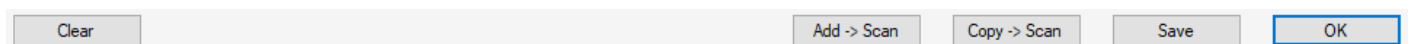
The commands:



allow you to move forward or backward manually from one sweep section to another.

The "Zoom" command allows you to enlarge or reduce the display.

Finally, the commands at the bottom of the window:



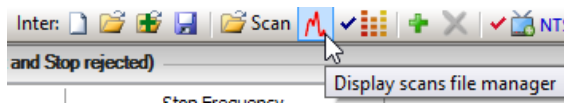
"Clear" resets the data, display and samples.

"Add -> Scan" allows to add the sampling to the previous module ("Scan"), while the command "Copy -> Scan" erases the data of the "Scan" module and replaces it with those of RF Explorer.

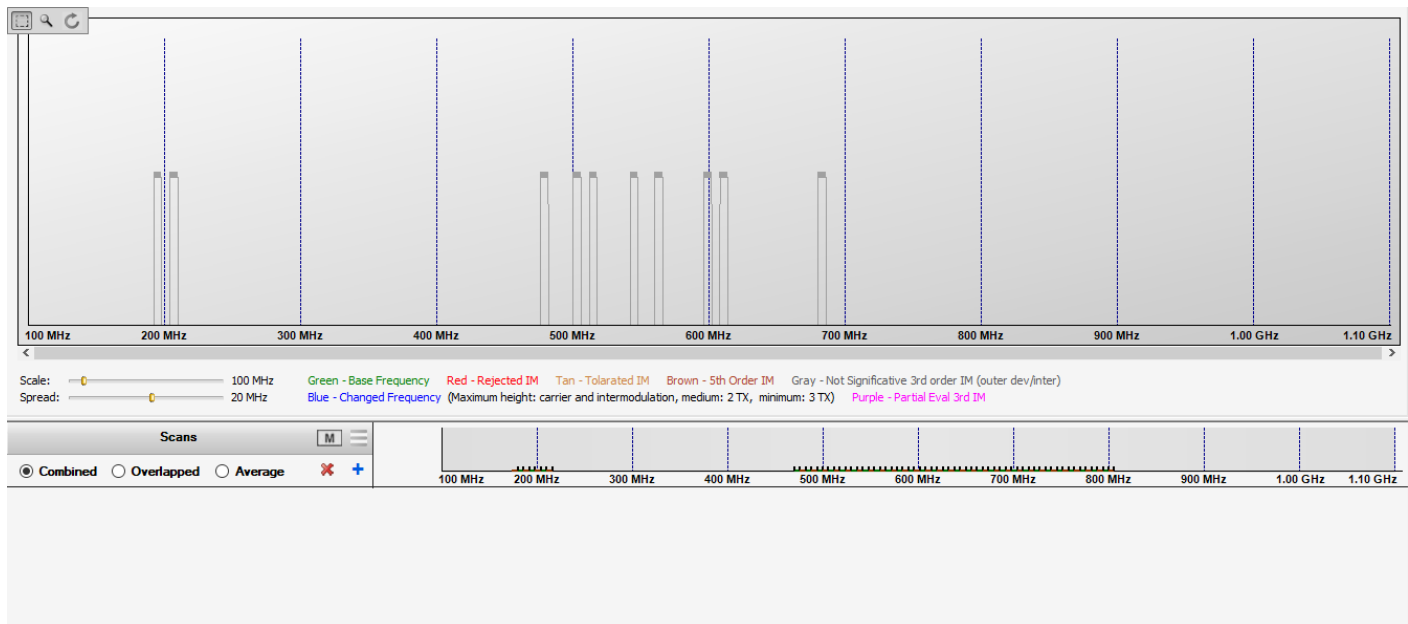
"Save" creates a data file in CSV format.

## 21.7 Scans File Manager

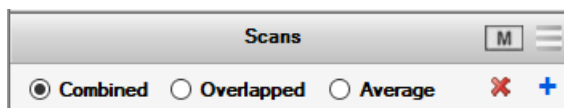
The command:



Display the scans file manager section below the details of the intermodulations.

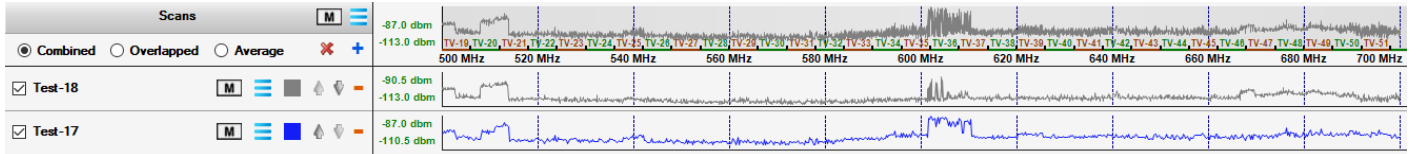


Adding scans files is done with the command '+':

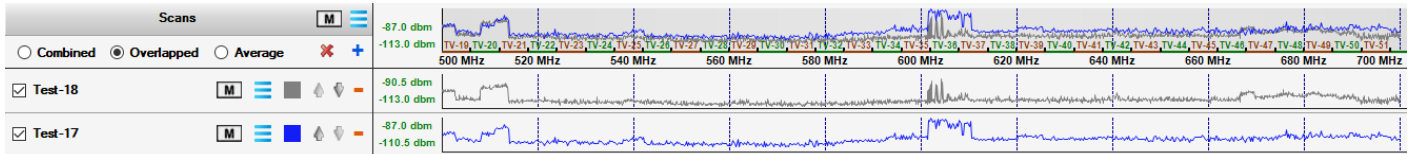


The 'X' command erases the files list.

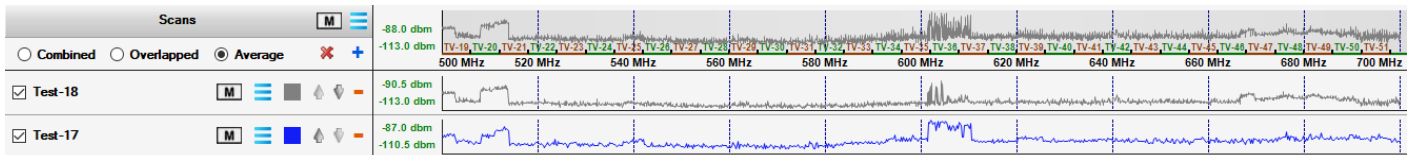
Let's take an example:



The upper part of the scans displays the combination of files, either in "Combined" mode, as above, or "Overlapped" mode:

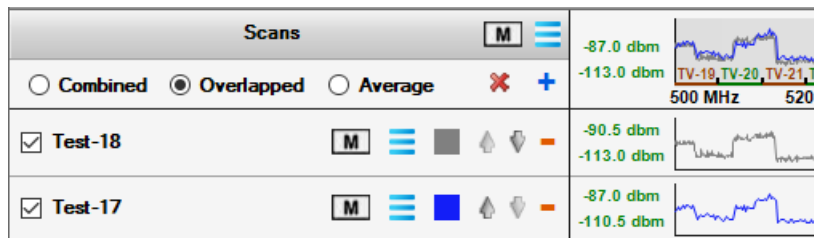


Or, in 'Average' mode:



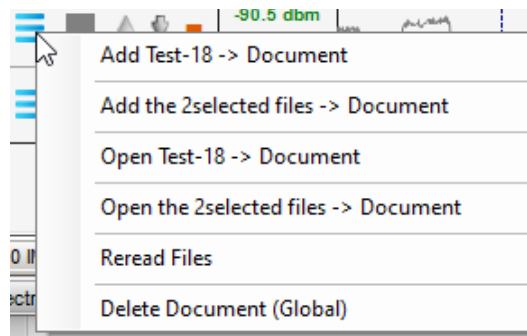
In 'Combined' mode, only the peak value is displayed, whilst in 'Average' mode, the average of the values is displayed.

Let's take a closer look at the file list:



Each item in the list can be activated or deactivated in the global section. The command '-' allows you to delete a file. The order of the files can be changed with the arrows "Up" and "Down". The color of the trace can also be changed.

The menu command allows you to manage the integration of these files into the system:

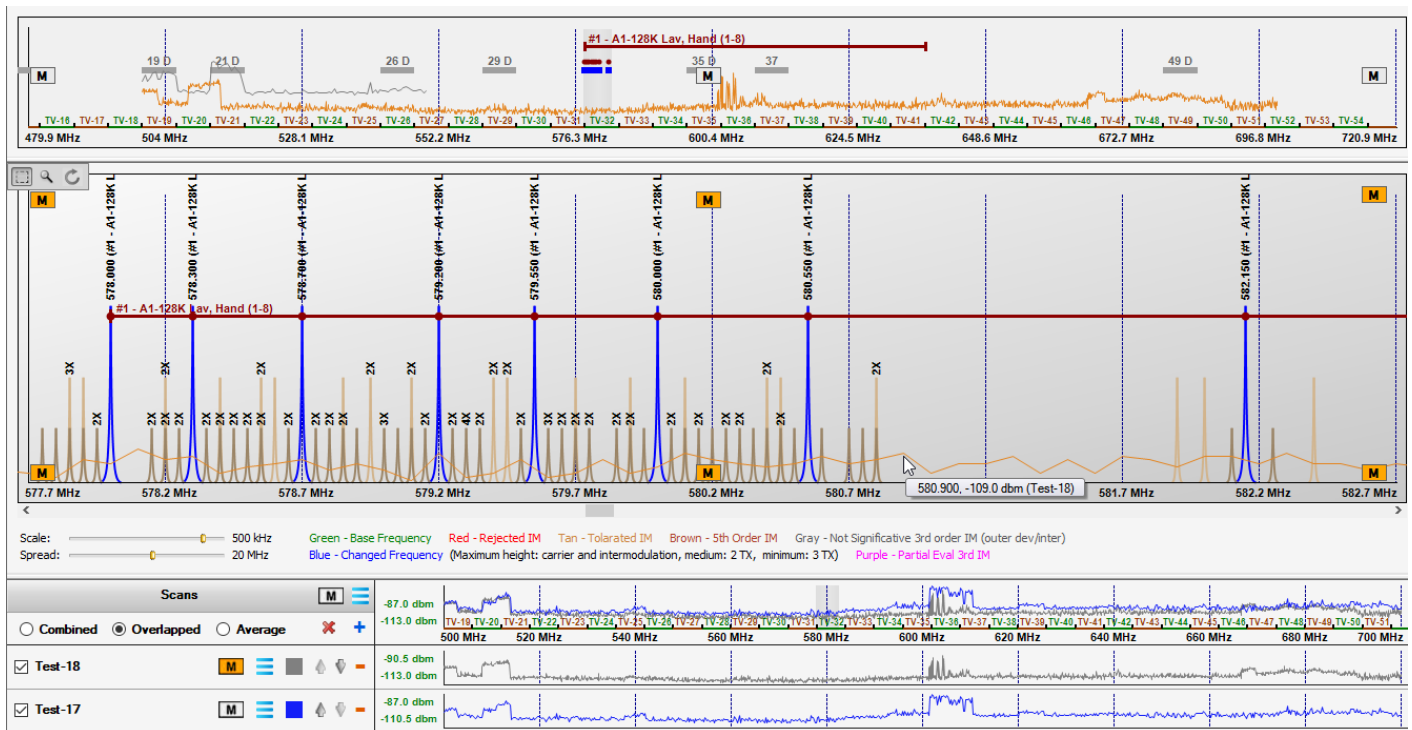


As in the standard scans manager, the "Add" command adds a file to the document, while the "Open" command erases the data before adding it. It is allowed to add all selected files simultaneously.

The "Reread Files" command allows you to read files again if changes have been made.

The "Delete" command deletes the data present in the document.

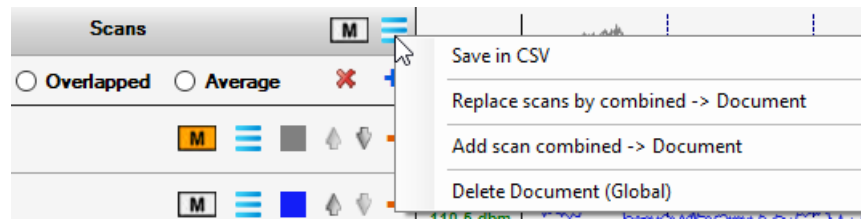
Finally, the command 'M' for 'Monitor' allows you to add one or more files overlapped on the global or detailed view:



The objective is to compare a more recent scan compared to that integrated into the document. In addition, you have access to all the functions of moving, zoom-in, etc. Flashing orange lights indicate that you are in 'Monitor' mode and that the data displayed are not all present in the document. A single click on the flashing indicator close the preview.

A double click on the 'M' button on the file list allows to select or unselect all the files.

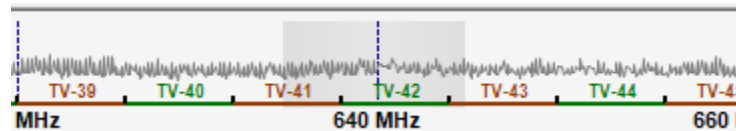
The combined part of the scans has its own menu:



It is thus allowed to save the combination of samplings or to integrate it into the document. The save command is not allowed in 'Overlapped' mode.

You can also preview the result with the 'Monitor' command.

Finally, the upper part of the sampling area displays the space occupied by the detailed area (as in the overview):



A click in the band of any scan allows to move the detailed area on this region of the spectrum.

## 21.8 Print

It is possible to print the graphical representation of global and detailed frequencies area with intermodulations. The printing is done in full screen portrait or landscape mode (by default) depending on the desired paper source. The values of frequencies of start and stop are the same, but the graphical representation is adjusted to the size of paper and the application window size does not influence.

## 21.9 View detachment to a window (2<sup>nd</sup> screen)

The "Intermodulations" view can be detached from the EazyRF application towards a window on a 2nd screen or overlaid with EazyRF if a 2nd screen is not connected.

To activate this function, double-click on the name of the view:



The name of the view is displayed in red to indicate that it is detached:



To return to standard mode, either close the window or redo a double click on the name of the pane (in red).

The "Frequencies Plan", "Spectrum View" and "On Tour" views can also be detached.

If more than one view is detached, a simple click on the name of the view will bring it to the foreground.

Obviously, the content of the detached views is synchronized with the changes made no matter where they are made.

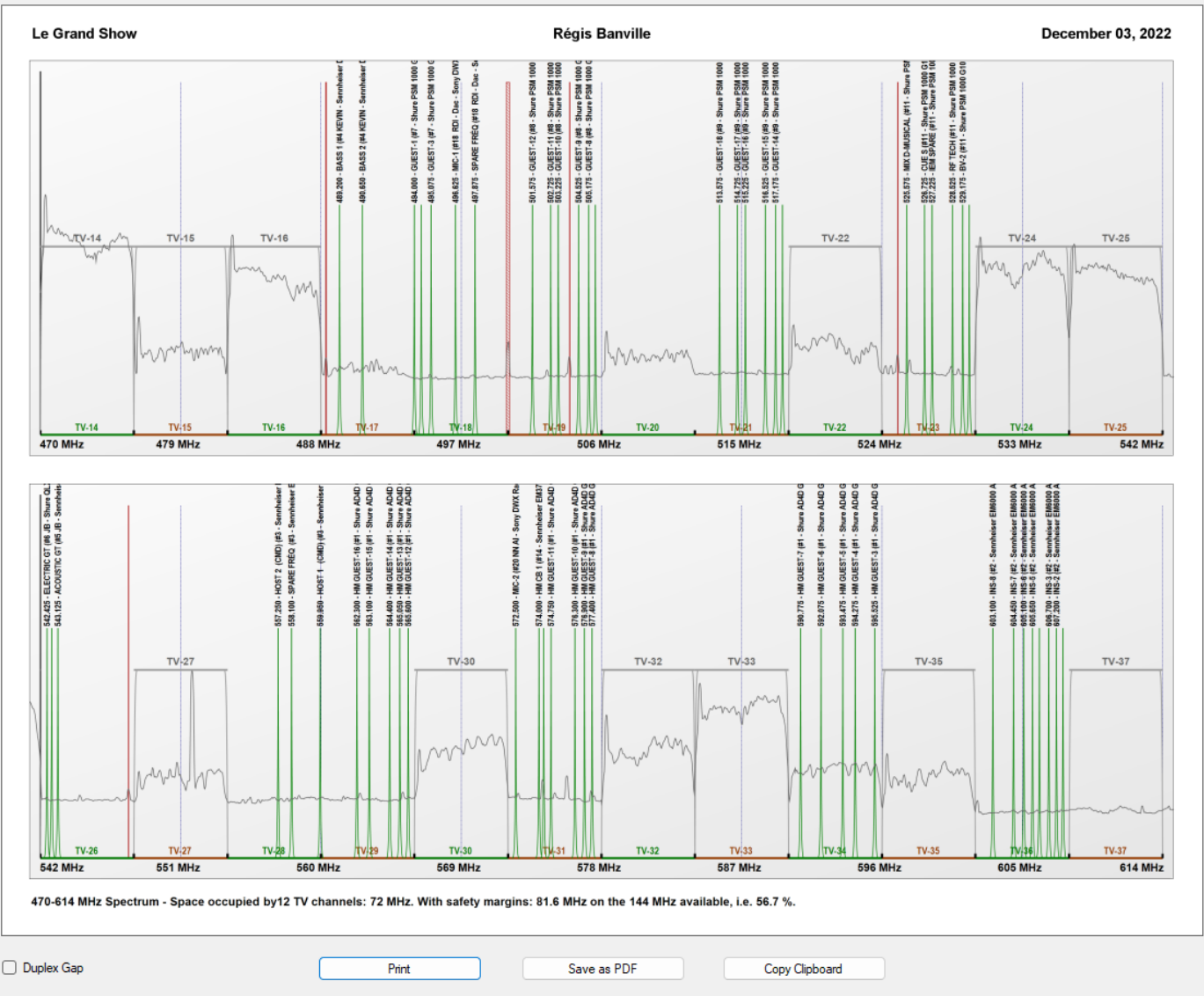
## 21.10 Frequencies spectrum manager

The frequencies spectrum manager is called by the last command in the detailed intermodulation section:



Which give:

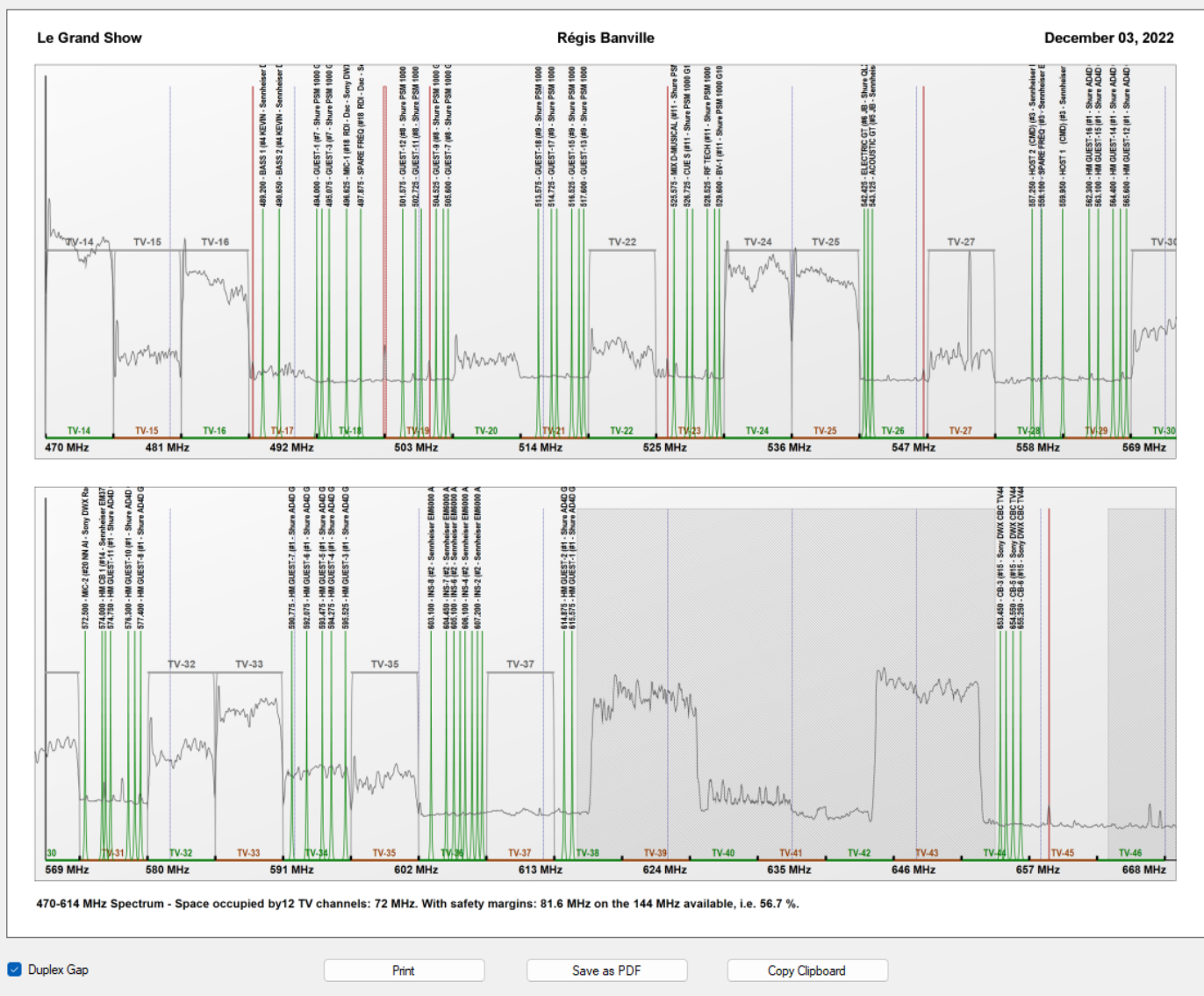
470-614 MHz Spectrum



The spectrum displayed corresponds to the frequency band reserved for commercial use between 470 and 700 MHz. The “Duplex Gap” option expands the band to the permitted region at the top.

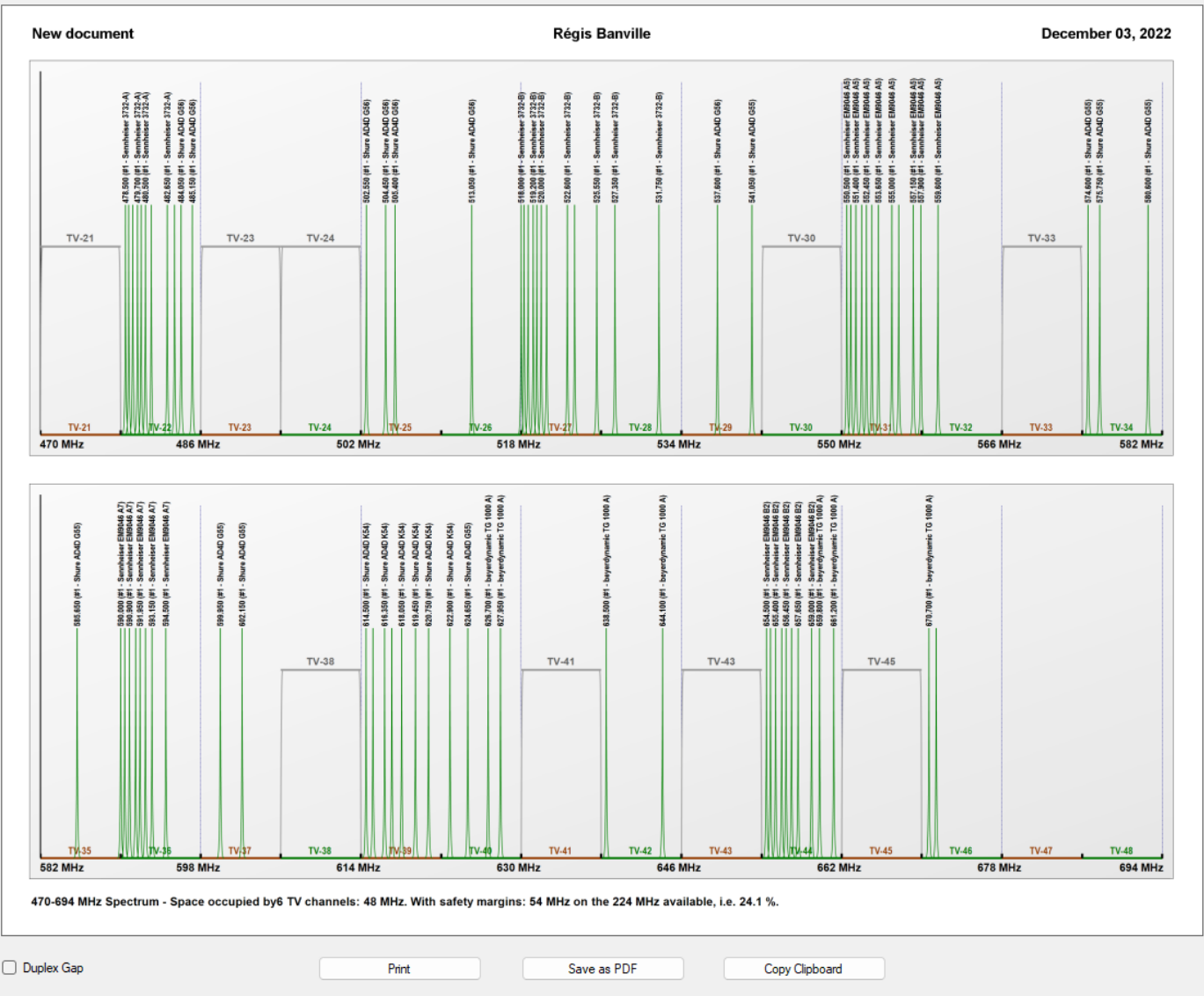
In North America, the base area available is 470 MHz to 614 MHz with a duplex gap of 614 to 616 MHz and another of 653 to 663 MHz. EazyRF displays the 470 MHz to 668 MHz zone with the duplex gap activated.

470-614 MHz Spectrum

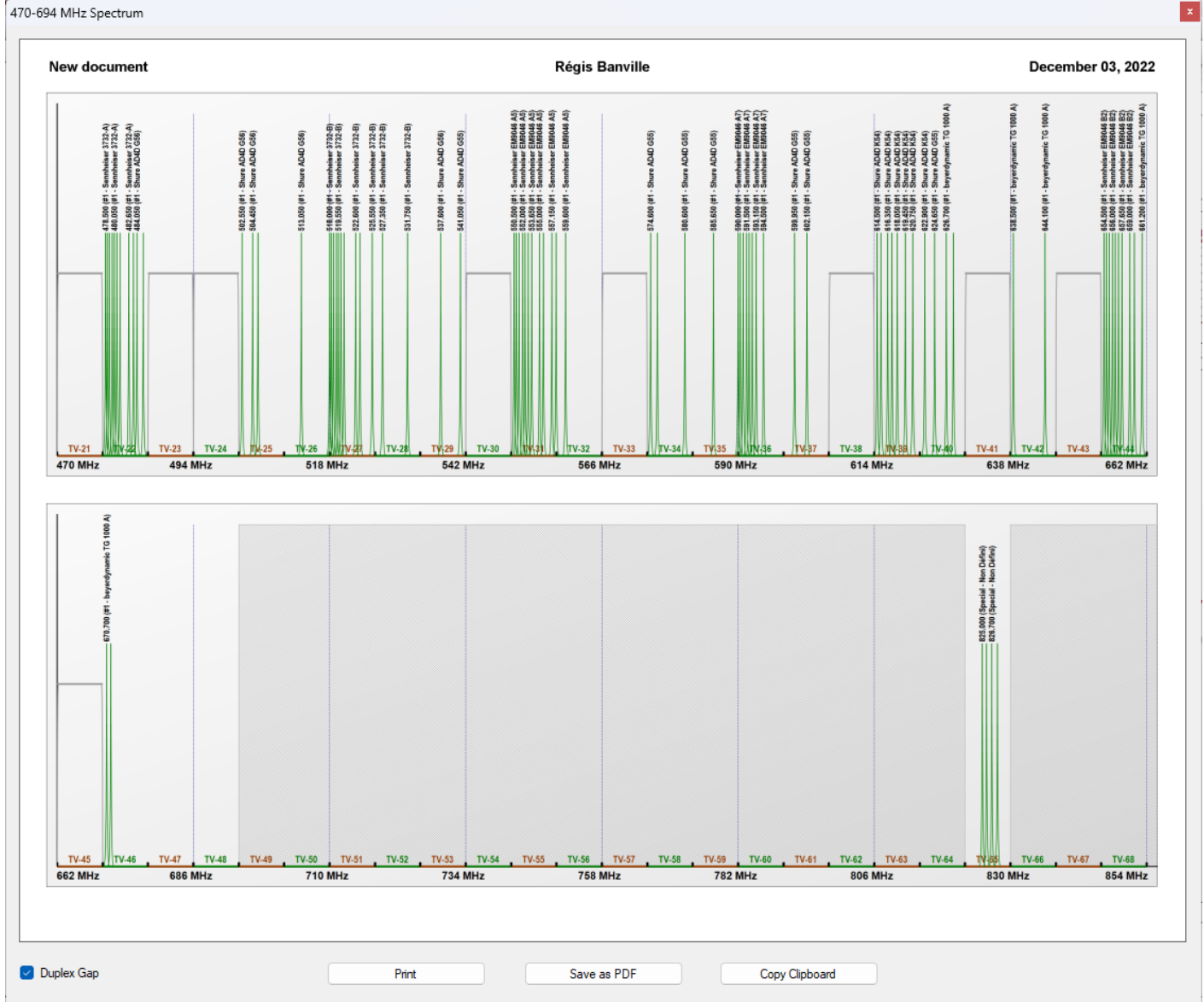


In Europe, the base area available is 470 MHz to 694 MHz with a duplex gap of 822 to 830 MHz.

470-694 MHz Spectrum



EazyRF displays the 470 MHz to 854 MHz band with the duplex gap activated.



The purpose of the module is to illustrate the entire RF space by spreading the frequency range over two sections in order to be able to print it on a single page or do the viewing without moving.

The window size adjusts to the resolution of the Windows desktop. The image shown is only a preview of the actual image. The image can be printed, saved in PDF format, or copied to the clipboard for use with other software.

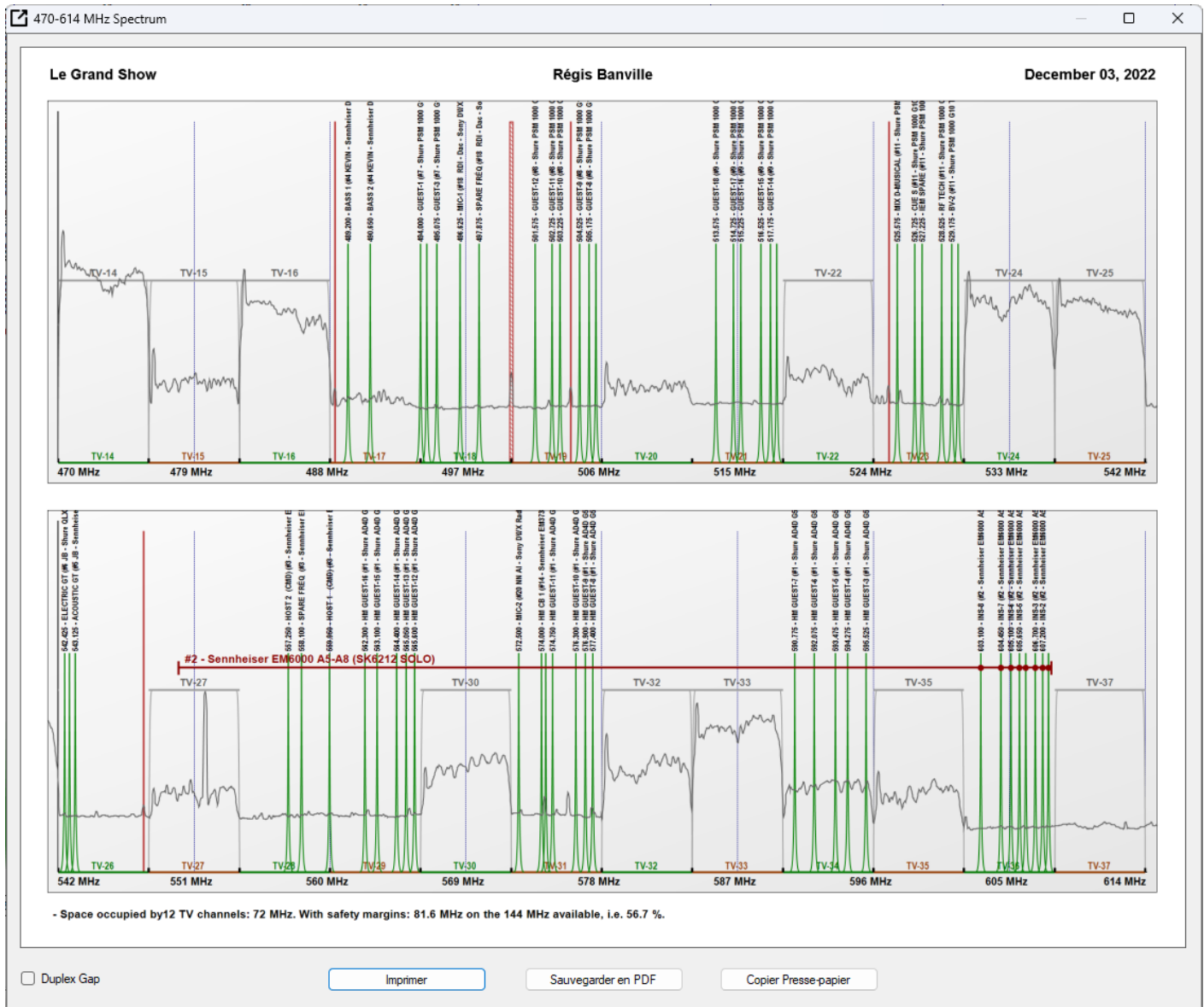
The basic size corresponds to the letter paper size used in America, which is 8.5 in by 11 in. This size only serves to illustrate a potential rendering. When printing, the size used is that of the paper of the selected printer.

The paper size used for saving in PDF format is that defined for the "Microsoft Print to PDF" device which allows high resolution (requires Windows 10 or higher).

EazyRF uses a high-resolution representation, 300 dpi, for detailed printing. The computer screen can only display lower resolution by using a reduction from 300 to 100 dpi.

### 21.10.1 Module detachment to a window (2<sup>nd</sup> screen)

By double-clicking on the title of the spectrum window, you can detach the module and display it either on a 2nd screen or in a floating window:



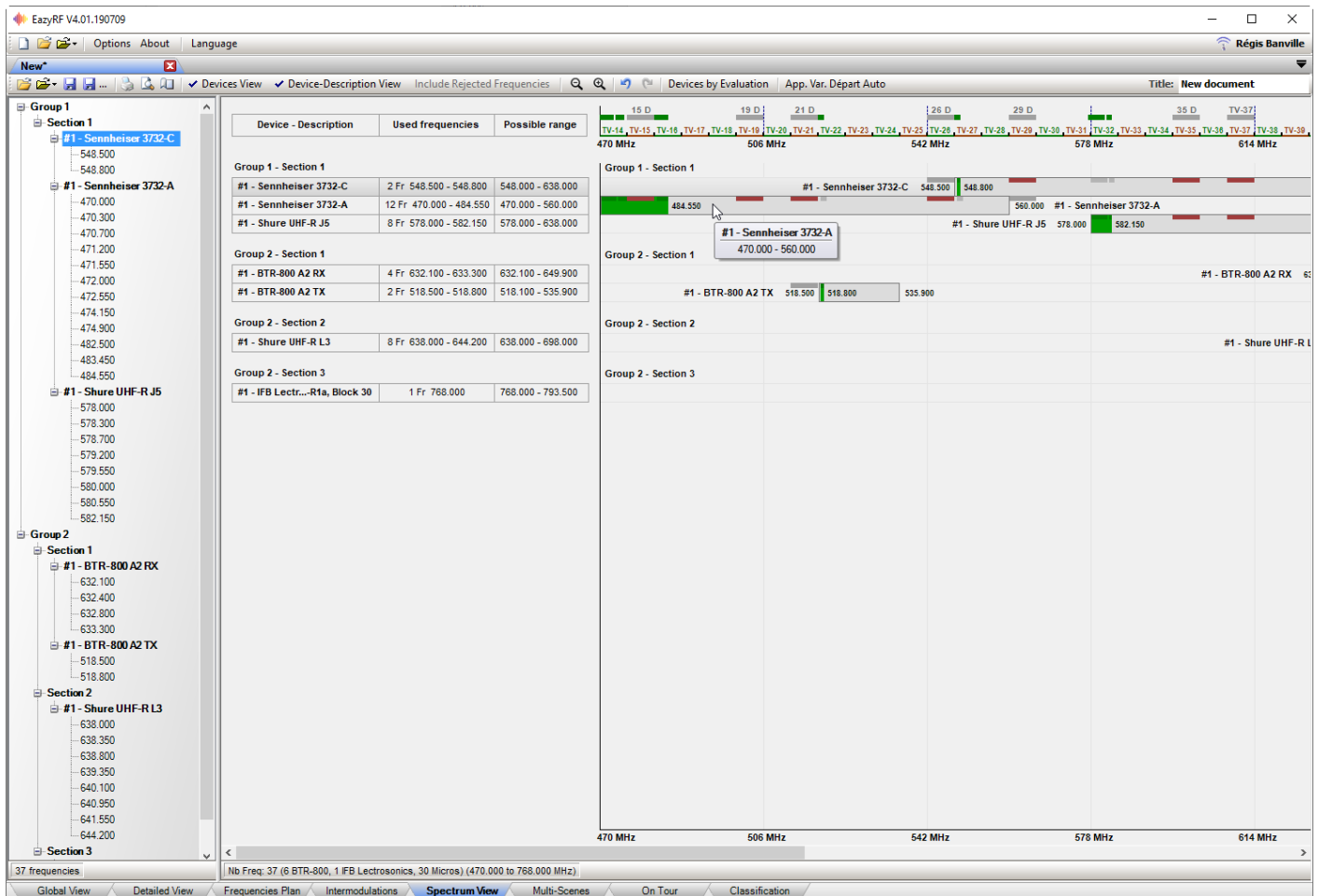
The window now displays the content of the spectrum continuously and no longer in static mode. The window is variable in size. The print is always made from the paper size, only the copy to the clipboard corresponds to the window size in high resolution.

This module does not allow any selection or modification of the document, it is only a dynamic viewing module.

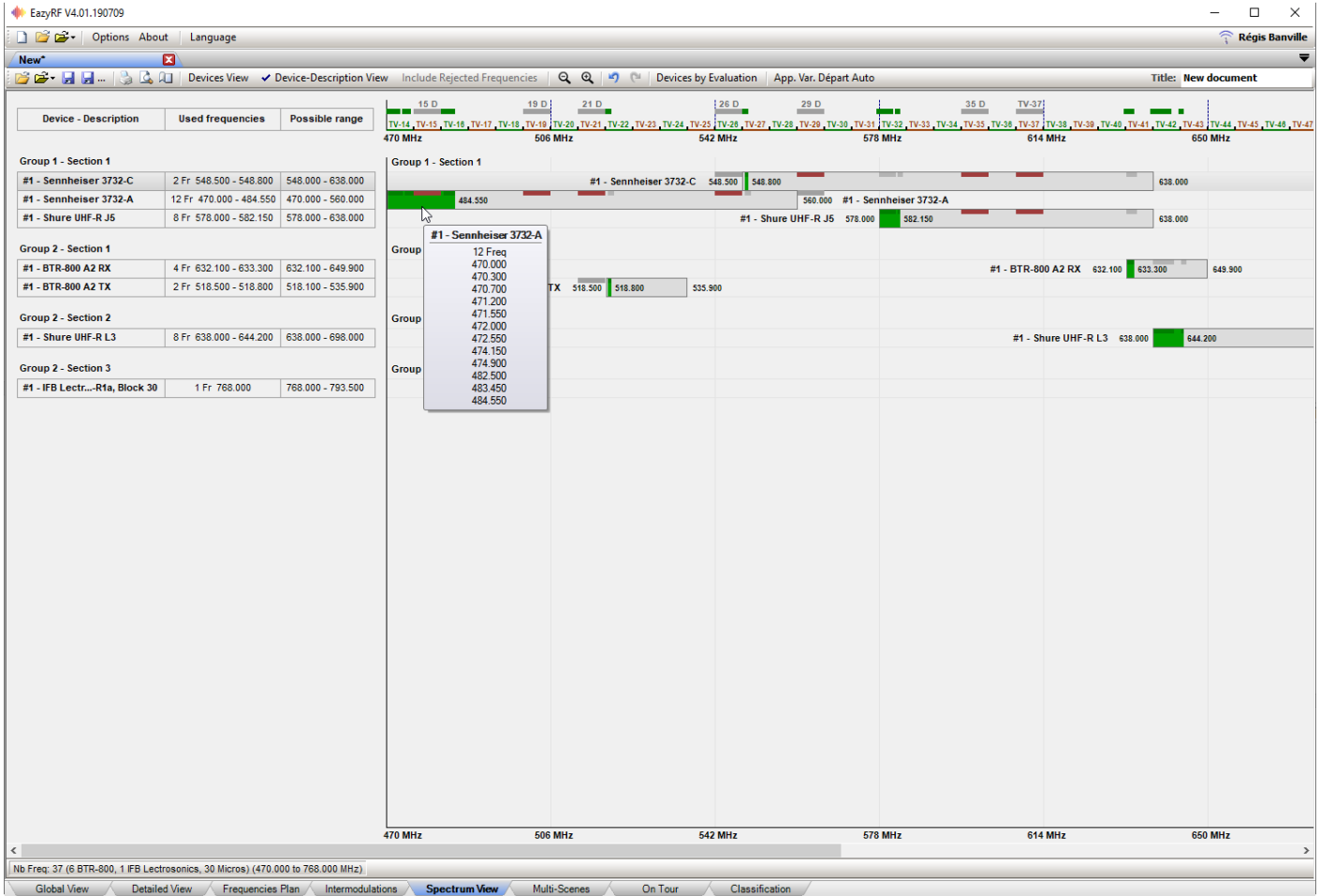


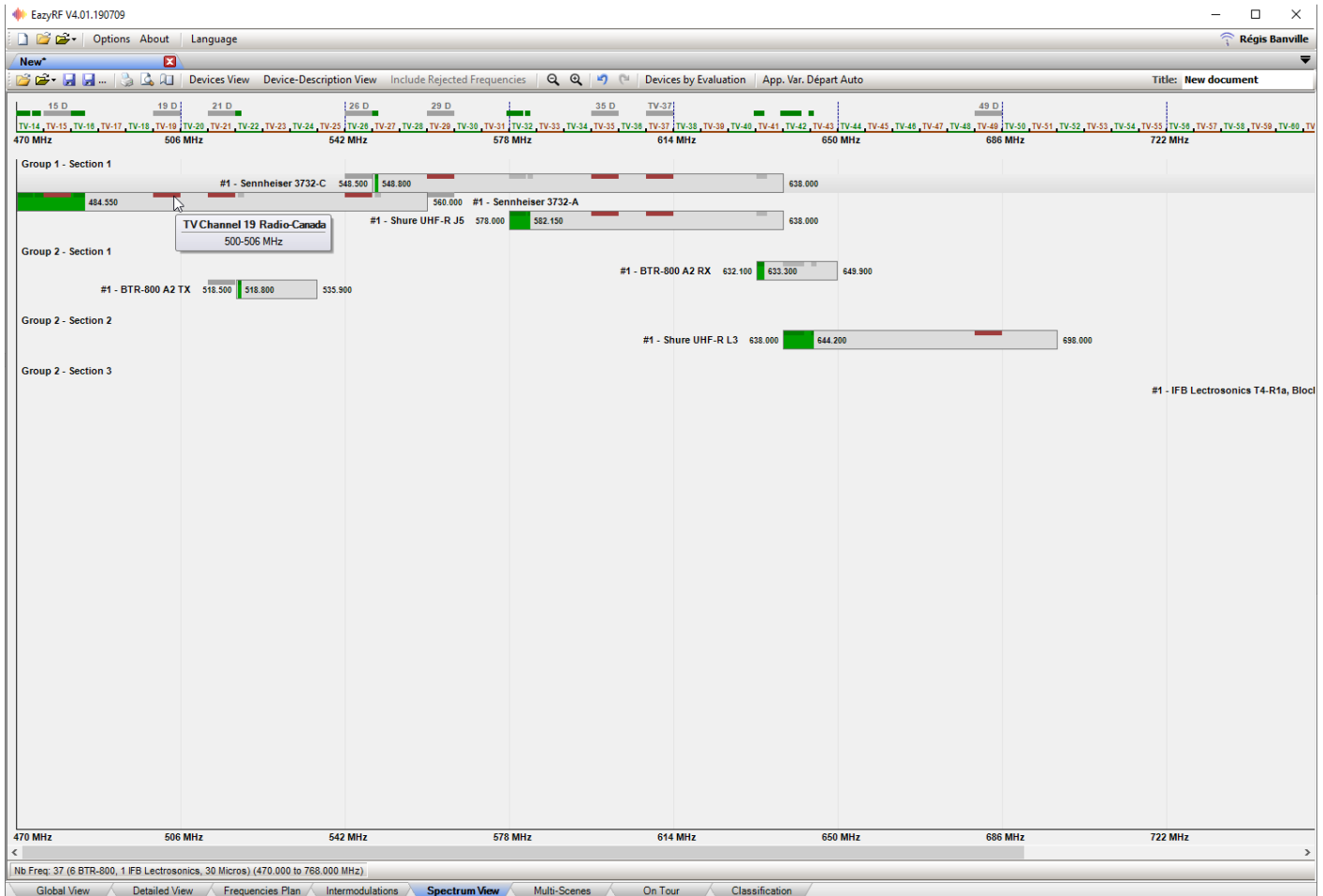
## 22 - Spectrum View

The "Spectrum View" pane displays the spectral space occupied by the devices, the TV channels and the area of rejected frequencies. Here is an example:



The list of devices can be retracted as the list Device-Description to leave it up to the spectrum:





All video standard (ATSC, PAL and SECAM) use the frequency 470 MHz for the start of the UHF region. So the alignment point is 470 more or less usable frequencies (start and stop of a device) or TV channels with the rejected reserved area zone (optional). The display area is adjusted automatically (the TV channels below 470 MHz are ignored if no device uses these frequencies).

The display options are global e.g. they are saved as master EazyRF parameters and not with the document.

This component is not an editor, so no changes are allowed (only zoom in, zoom out). Use the Devices pane to locate a Device or Group/Section in the field of detailed view (there is no selection).

The printout includes detailed part, adjusted according to the size of the paper and a vertical scale to ensure that all devices are displayed on a single page.

## 22.1 View detachment to a window (2<sup>nd</sup> screen)

The "Spectrum View" view can be detached from the EazyRF application towards a window on a 2nd screen or overlaid with EazyRF if a 2nd screen is not connected.

To activate this function, double-click on the name of the view:



The name of the view is displayed in red to indicate that it is detached:



To return to standard mode, either close the window or redo a double click on the name of the pane (in red).

The "Frequencies Plan", "Intermodulations" and "On Tour" views can also be detached.

If more than one view is detached, a simple click on the name of the view will bring it to the foreground.

Obviously, the content of the detached views is synchronized with the changes made no matter where they are made.

## 23 - On Tour

The component "On Tour" allows to prepare a plan of frequencies compatible for several cities simultaneously. What varies from one city to another? Obviously, these are the TV channels. This component allows for the management of a plan by adding the TV channels of several cities. Each city can be enabled or disabled as needed.

The presentation is a bit like the "Spectrum View," but the emphasis has been placed on the position of the TV channels in relation to the devices in the plan. Here is an overview:



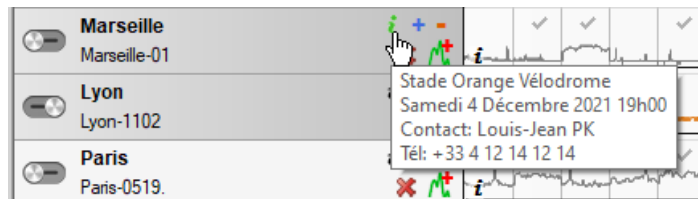
The management of cities, channels and samples of each city is done by the editor:

SECAM - TV channels				Tv-21	Tv-22	Tv-23	Tv-24	Tv-25	Tv-26	Tv-27	Tv-28	Tv-29	Tv-30
Copy	Cities (3)	X	+	470	478	486	494	502	510	518	526	534	542
Combined	Reject Freq	<input type="checkbox"/>		[Spectrum plot]									
<input type="checkbox"/> Document	No sampling	<input type="checkbox"/>		[Spectrum plot]									
<input type="checkbox"/> Marseille	Marseille-01	<i>i</i>	+ -	[Spectrum plot]									
<input type="checkbox"/> Lyon	Lyon-1102	<i>i</i>	+ -	[Spectrum plot]									
<input type="checkbox"/> Paris	Paris-0519.	<i>i</i>	+ -	[Spectrum plot]									

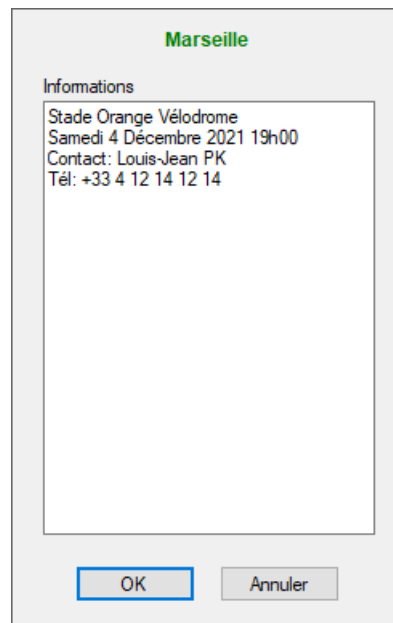
You can add, insert, delete or move one or more cities simultaneously. In addition, these modifications are now part of the "Undo / Redo" manager. The selection can be moved.

By default, adding cities is done in non-active mode. With a new document, adding a city turns off the document's channels.

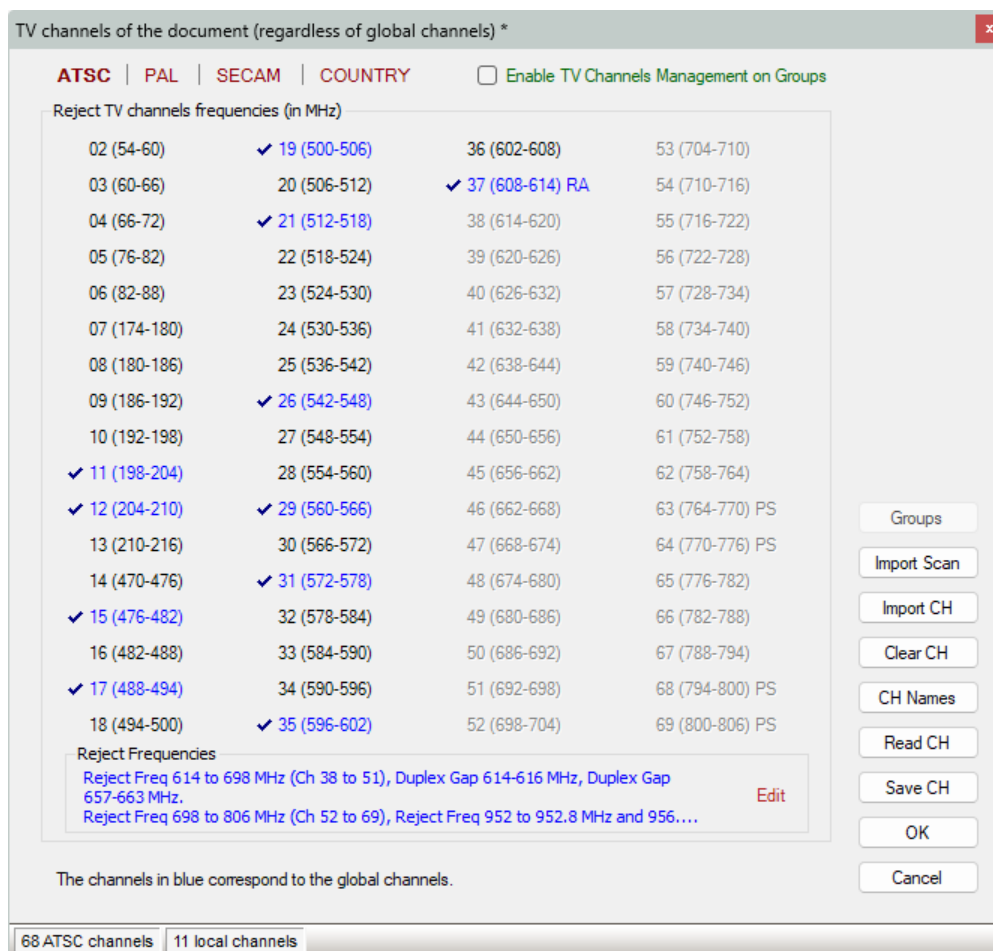
The "i" command allows you to add information about an event, date, time, address, contact, etc. (text zone) :



The "i" command is displayed in green if information is present. Just click on the "i" to call the editor:



It is possible to add a series of TV channels previously created and saved with the standard TV channels editor:



A command allows you to delete the list with its names. You must create and save each list by this tool. After adding a more than one city in the "On Tour", this tool is not available any more in the Global, Detailed and Intermodulations view. A message tells you to return to On Tour for editing channels.

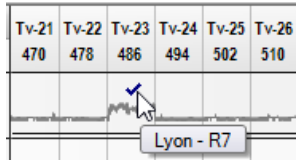
If the channels of the document are activated document, the editor of channels works in a normal way. As against, if the channels of the document are disabled:



Then the editor no longer displays the channels of the document and so allows to create new cities or edit them. The result of the editing of a city is not illustrated in the lower part. You must remove the city and re-import it. Changes are not allocated to the channels of the document because they are inactive.

As EazyRF is multi documents and multi applications (launched more than once), it is still possible to launch a new document and create new cities if desired.

It is strongly recommended to add a name (description) for each channel, this allows to identify them more clearly:



Each city can be changed directly (add or delete a channel). These changes do not affect the file of the city, besides the changes in external file does not have influences. Finally, the setting on or off is also permitted (much like the "Layers" in Photoshop):

SECAM - TV channels	
Copy	Cities (3) X +
Combined	Reject Freq <input type="checkbox"/>
<input type="checkbox"/> Document	No sampling
<input type="checkbox"/> Marseille	Marseille-01
<input type="checkbox"/> Lyon	Lyon-1102
<input type="checkbox"/> Paris	Paris-0519.

A sample file can be added to each city with the commands of the 2nd line of a city:

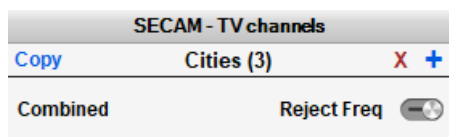
<input type="checkbox"/> Marseille	Marseille-01		
<input type="checkbox"/> Lyon	Lyon-1102		

When adding a file, only the path to the filename is saved, not the sample data.

The list can also be reclassified by dragging the selection (with no effect on the devices evaluation):

SECAM - TV channels		Tv-21	Tv-22	Tv-23	Tv-24	Tv-25	Tv-26	Tv-27	Tv-28	Tv-29	Tv-30
Copy	Cities (3) X +	470	478	486	494	502	510	518	526	534	542
Combined	Reject Freq <input type="checkbox"/>										
<input type="checkbox"/> Document	No sampling										
<input type="checkbox"/> Marseille	Marseille-01										
<input type="checkbox"/> Lyon	Lyon-1102										
<input type="checkbox"/> Paris	Paris-0519.										

To delete a city, use the command "-". To delete the whole list, use the "X" command:



Activation of rejection of frequencies for each video standard can also be enabled or disabled. For the ATSC video standard, the rejection of the 600 MHz and 700 MHz bands matches the values in the document and then changes simultaneously when enabling or disabling the rejection of frequencies. Standard channel editing allows this to be done independently.

To build a plan intended for a tour, it's better to clear the channel list of the document and add the desired cities.

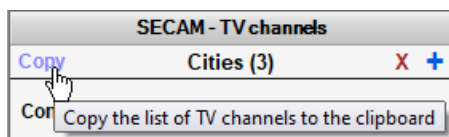
When several cities are added to the document, the placeholder may not be sufficient to have a complete view. The channel area can be enlarged up to about 80% of the window size with:

The screenshot shows a table with 10 columns labeled Tv-2 through Tv-10. Below each label is a numerical frequency value. A vertical double-headed arrow is positioned above the table, indicating it can be resized.

Tv-2	Tv-3	Tv-4	Tv-5	Tv-6	Tv-7	Tv-8	Tv-9	Tv-10
54	60	66	76	82	174	180	186	192

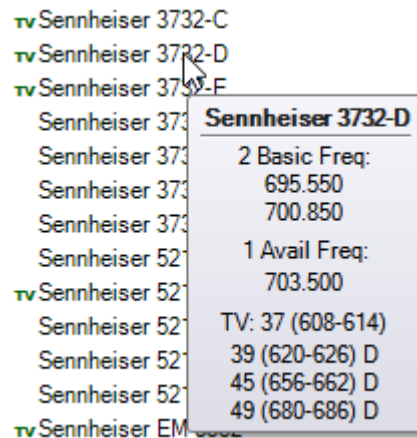
The position is saved with the document for subsequent use.

If the list is too long, you can use the "Copy" command:



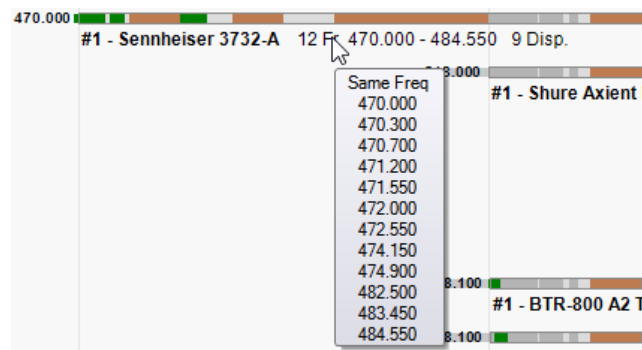
The image of the list will be copied to the clipboard for viewing on another application.

To add devices to the document, just use the tabs "Variables" and "Fixed". The list of available frequencies is naturally displays:



The creation of a document with several cities is more delicate given the higher number of TV channels. Just do a first draft in "Full Automatic" mode. EazyRF recalculate the frequencies of each device to find a solution. Although in the case of previous Sennheiser, there seems to be only 1 frequency available, should not be afraid to ask for a higher number in automatic mode, the final outcome cannot be predicted. The indication given corresponds to the current situation if no changes can be made (manual mode, adding automatic or protected devices).

For each device of the document, detailed information is available in tool tip or description of the device, the frequency list, the list of available frequencies, the details of a TV channel, the list of irregularities (intermodulation, rejection, etc.):



The edition of the document in this component is not total. It is allowed to add or delete groups, sections and devices. It is not allowed to move them however (the general views do that very well).

To edit a device, simply double-click on a device (regardless of the horizontal position) and standard editor is displayed:

Device Edition ✕

Description:

Device:  Micros

Start:  Stop:  Increment:

Auto Start:

Descending order

5th Order Evaluation (if Global)

TV Channels: 15 (476-482 MHz ...)

Tolerance 5th:

TX Power Level:  1-50 mw

Fr Nbr:   Protected  Manual  Avail Freq

Tolerance 2 TX:

Tolerance 3 TX:

Separation:

Image Freq:

Filter:

+ Ctrl = 1 Col

No	Description	Freq	Intermodulation
1		470.000	
2		470.300 14	
3		470.700 14	
4		471.200 14	
5		471.550 14	
6		472.000 14	
7		472.550 14	
8		474.150 14	
9		474.900 14	
10		482.500 16	
11		483.450 16	
12		484.550 16	

9 Avail Freq

16	485.200
16	486.850
18	494.550
18	495.550
18	496.400
18	496.700
18	498.100
18	498.500
18	499.300

After completing a first draft with a list of possible cities (there is still a limit to the number of channels), just save the plan under different names and disable unnecessary TV channels cities. For example, if you are touring in Quebec, no need to keep the channels of Montreal and other cities. This will allow you to make local changes with greater flexibility.

The purpose of this component is to prepare a plan that will be compatible with the most possible cities. It is practically impossible to put too much TV channels (you have to keep some space for devices).

### 23.1 View detachment to a window (2<sup>nd</sup> screen)

The "On Tour" view can be detached from the EazyRF application towards a window on a 2nd screen or overlaid with EazyRF if a 2nd screen is not connected.

To activate this function, double-click on the name of the view:



The name of the view is displayed in red to indicate that it is detached:



To return to standard mode, either close the window or redo a double click on the name of the pane (in red).

The "Frequencies Plan", "Intermodulations" and "Spectrum View" views can also be detached.

If more than one view is detached, a simple click on the name of the view will bring it to the foreground.

Obviously, the content of the detached views is synchronized with the changes made no matter where they are made.

## 24 - Classification

The view "Classification" displays the order of evaluation of unprotected and not off devices. If we have this document:

The screenshot shows a software window titled "Group 1" containing three sections of equipment:

- Section 1:**
  - #1 - A1-128K Lav, Hand (1-8) TV (8 Freq (0 Avail))
  - #1 - Shure UHF-R J5 TV (8 Freq (0 Avail))
  - #1 - Sennheiser 2000-A TV (8 Freq (0 Avail))
  - #1 - Sennheiser 3732-A TV (8 Freq (0 Avail))
  - #1 - Sennheiser 3732-B TV (8 Freq (0 Avail))
  - #1 - Shure UHF-R X1 TV (8 Freq (2 Avail))
  - #1 - Sennheiser Evolution G2 Grp E TV (8 Freq (14 Avail))
- Section 2:**
  - #1 - BTR-800 A2 RX (4 Freq (0 Avail))
  - #1 - BTR-800 A2 TX TV (2 Freq (0 Avail))
  - #1 - BTR-800 E88 RX TV (4 Freq (0 Avail))
  - #1 - BTR-800 E88 TX TV (2 Freq (0 Avail))
- Section 3:**
  - #1 - IFB Lectrosonics T4-R1a, Block 19 TV (8 Freq (0 Avail))
  - #1 - IFB Lectrosonics T4-R1a, Block 22 TV (1 Freq (0 Avail))
  - #1 - Sennheiser Evolution G2 Grp B IEM TV (4 Freq (0 Avail))
  - #1 - Shure PSM 900 L6 TV (8 Freq (20 Avail))
  - #1 - Shure PSM 1000 P8 TV (4 Freq (52 Avail))

The "Classification" will show:

The screenshot shows the "Classification" view in EazyRF V4.01.190709. The interface includes a tree view on the left and a main table on the right. The table is titled "Classification of equipment for evaluation" and contains the following data:

No	Device - Description	Group - Section	From	To	Descending	Type	Fix. / Var.	Toler 2 TX	Toler 3 TX	Separation
1	#1 - BTR-800 E88 RX	Groupe 1 - Section 2	470.100	487.900		BTR-800	Variable	150	50	300
2	#1 - IFB Lectrosonics T4-R1a...	Groupe 1 - Section 3	486.400	511.900		IFB Lectroso...	Variable	150	50	300
3	#1 - BTR-800 A2 TX	Groupe 1 - Section 2	518.100	535.900		BTR-800	Variable	150	50	300
4	#1 - Sennheiser 2000-A	Groupe 1 - Section 1	516.000	558.000		Micros	Variable	150	50	350
5	#1 - Sennheiser 3732-A	Groupe 1 - Section 1	470.000	560.000		Micros	Variable	150	50	350
6	#1 - BTR-800 E88 TX	Groupe 1 - Section 2	590.100	607.900		BTR-800	Variable	150	50	300
7	#1 - Sennheiser 3732-B	Groupe 1 - Section 1	518.000	608.000		Micros	Variable	150	50	350
8	#1 - A1-128K Lav, Hand (1-8)	Groupe 1 - Section 1	578.000	638.000		Micros	Variable	100	50	300
9	#1 - Shure UHF-R J5	Groupe 1 - Section 1	578.000	638.000		Micros	Variable	150	50	300
10	#1 - BTR-800 A2 RX	Groupe 1 - Section 2	632.100	649.900		BTR-800	Variable	150	50	300
11	#1 - Sennheiser Evolution G...	Groupe 1 - Section 3	626.000	662.000		In-Ear	Variable	300	300	500
12	#1 - Shure PSM 900-L6	Groupe 1 - Section 3	656.125	691.875		In-Ear	Variable	300	300	500
13	#1 - Shure PSM1000 L8 (62...	Groupe 1 - Section 3	626.100	697.900		In-Ear	Variable	300	300	500
14	#1 - IFB Lectrosonics T4-R1a...	Groupe 1 - Section 3	819.200	844.700		IFB Lectroso...	Variable	150	50	300
15	#1 - Sennheiser Evolution G...	Groupe 1 - Section 1	830.025	866.000		Micros	Variable	150	50	350
16	#1 - Shure UHF-R X1	Groupe 1 - Section 1	944.000	952.000		Micros	Variable	150	50	300

Below the main table, there are sections for "Protected Devices" and "Devices Off", both with empty tables.

Let us examine the list closer:

Classification of equipment for evaluation				
No	Device - Description	Group - Section	From	To
1	#1 - BTR-800 E88 RX	Group 1 - Section 2	470.100	487.900
2	#1 - IFB Lectrosonics T4-R1...	Group 1 - Section 3	486.400	511.900
3	#1 - BTR-800 A2 TX	Group 1 - Section 2	518.100	535.900
4	#1 - Sennheiser 2000-A	Group 1 - Section 1	516.000	558.000
5	#1 - Sennheiser 3732-A	Group 1 - Section 1	470.000	560.000
6	#1 - IFB Lectrosonics T4-R1...	Group 1 - Section 3	563.200	588.700
7	#1 - BTR-800 E88 TX	Group 1 - Section 2	590.100	607.900
8	#1 - Sennheiser 3732-B	Group 1 - Section 1	518.000	608.000
9	#1 - A1-128K Lav, Hand (1-8)	Group 1 - Section 1	578.000	638.000
10	#1 - Shure UHF-R J5	Group 1 - Section 1	578.000	638.000
11	#1 - BTR-800 A2 RX	Group 1 - Section 2	632.100	649.900
12	#1 - Sennheiser Evolution G...	Group 1 - Section 3	626.000	662.000
13	#1 - Shure PSM 900 L6	Group 1 - Section 3	656.000	692.000
14	#1 - Shure PSM 1000 P8	Group 1 - Section 3	710.000	790.000
15	#1 - Sennheiser Evolution G...	Group 1 - Section 1	830.025	866.000
16	#1 - Shure UHF-R X1	Group 1 - Section 1	944.000	952.000

This list shows the order of evaluation of devices in full automatic mode (unprotected devices).

The devices are sorted by Start and Stop frequency, but sometimes there is inversion to allow a device with its frequency range is narrower, to be evaluated before another which its range is wider. For example, the BTR-800 A2 TX (518.100-535.900) and Sennheiser 3732-A (470.000 to 560.000). The BTR-800 is classified before 3732-A because of its narrower range of frequencies, so it will be easier to find X frequencies of BTR if these frequencies have not been assigned to another device. The 3732-A has a much greater range, it should be easier to find frequencies for this device.

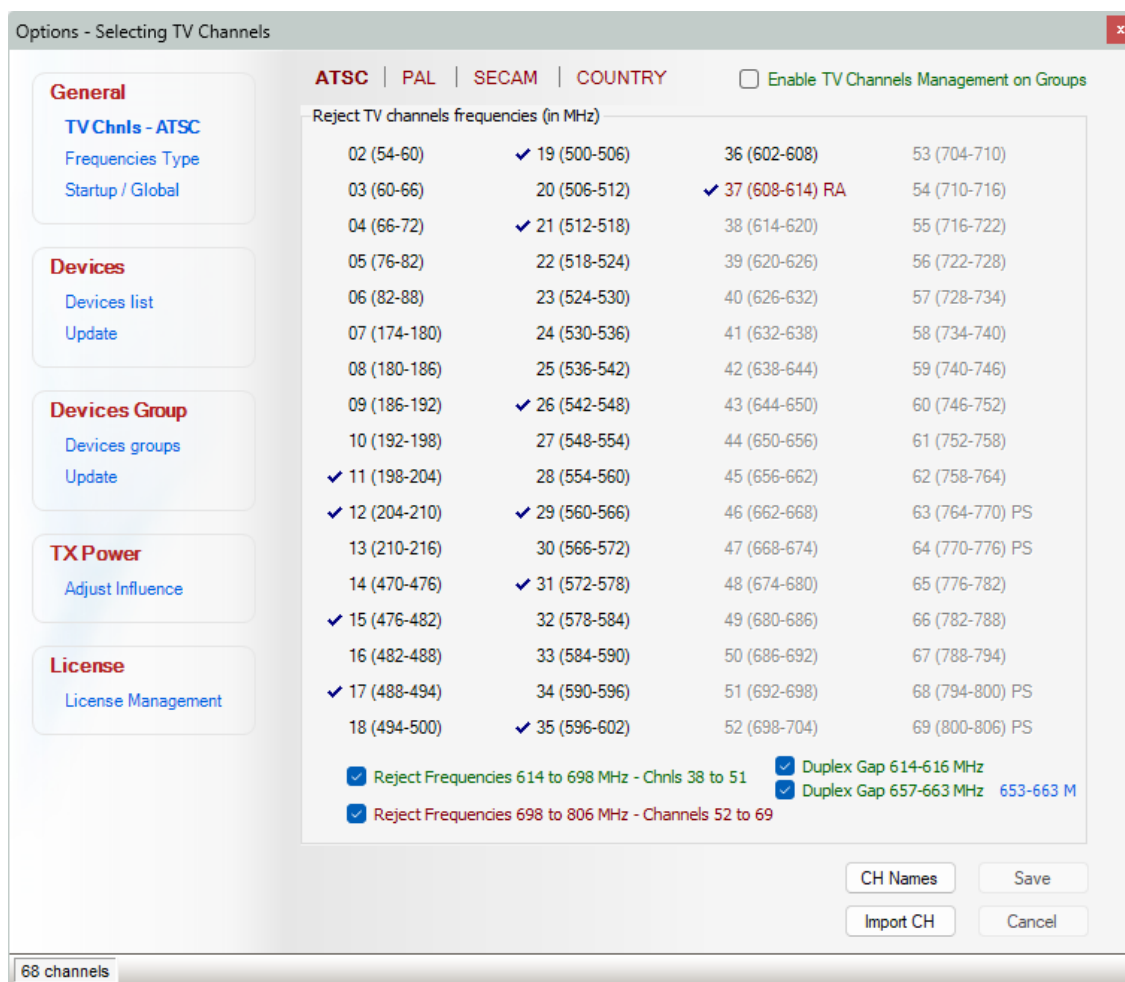
Obviously this method has its limits, when there is no possible solution, there is simply no.

Both lists of protected devices and off complete the list of devices for informational purposes only.

The list of devices of the left part of the view allows to identify a device in the right lists and vice versa by selecting it.

## 25 - Options

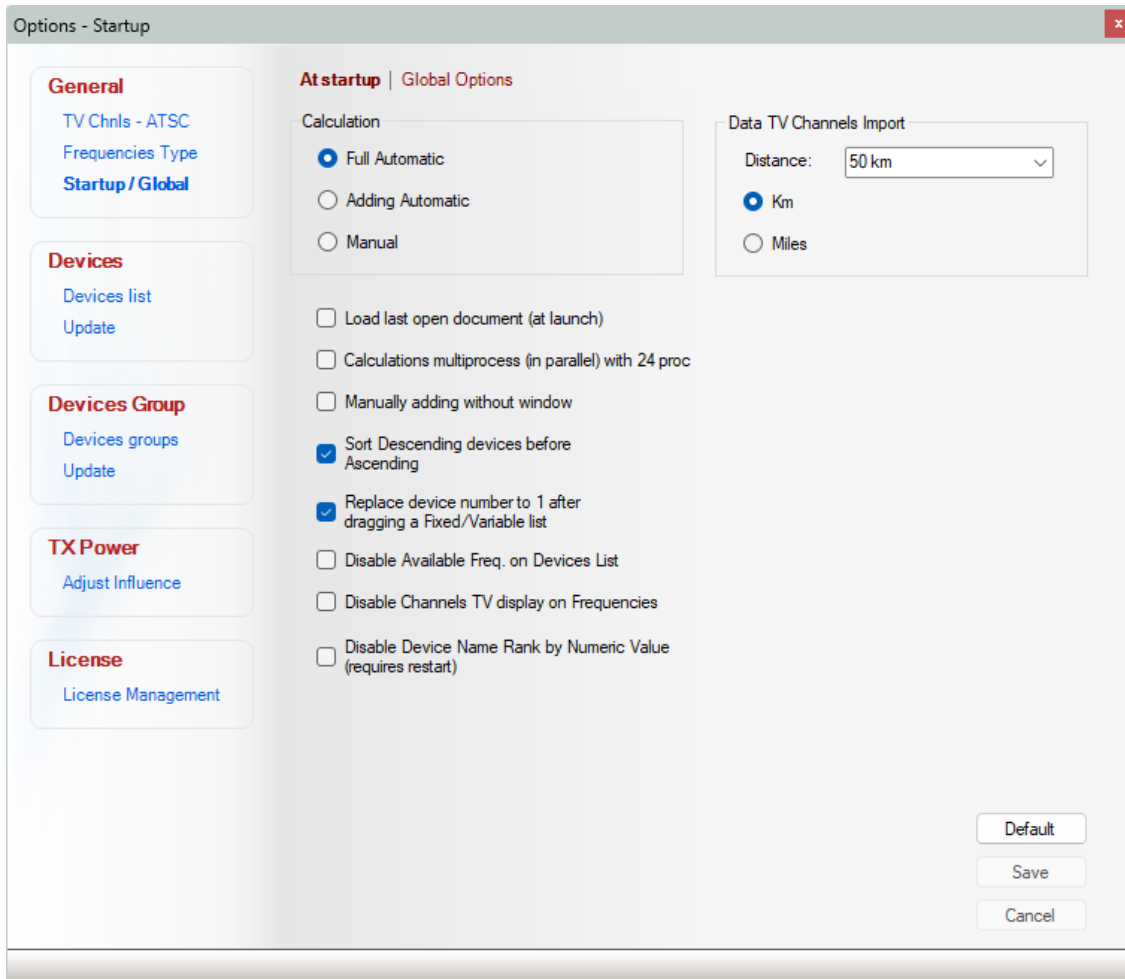
The "Options" menu allows to set the TV Channels, the Type of frequencies, the start options and default settings of a document, the list of Variables and Fixed devices, the influence of the Power level and the management of license file.



To set an option, click on the items in the list on the left side.

### 25.1 Options Startup/Global

The following items can be set and used at start of EazyRF:



The calculation determines which mode to use at starting up and at creation of new document.

Load last open document (at launch)

Reloads the last working document at start of EazyRF.

Calculations multiprocess (in parallel) with 12 proc

Enable or disable the computation across multiple cores.

Manually adding without window

In calculation mode "Manual" when adding a device a window appears to enter frequencies. This option allows you to add devices directly without window with 0 frequency.

Sort Descending devices before Ascending

In "Full Automatic" calculation mode, the devices are evaluated in order of growth of the start frequencies. In the case of the evaluation of a device in descending order, the starting value calculations is found to be the stop frequency. This option is used to reverse the order of evaluation.

Replace device number to 1 after dragging a Fixed/Variable list

In global and detailed views the number of devices added simultaneously can be defined (X1 or Xx), this option resets the counter to 1 or retains its value (see chapter 7).

Disable Available Freq. on Devices List

Turns off the calculation of available frequencies in the global and detailed views when the mouse cursor is positioned on the name of a device. If your computer is not fast enough, this option will give more fluidity (see Chapter 18).

Disable Channels TV display on Frequencies

This option disables the display of a TV channel number for the frequency:

632.100	41
632.400	41
632.850	41
633.450	41

Disable Device Name Rank by Numeric Value (requires restart)

The name of the devices with a number are listed in order of numerical value (example: Shure PSM 900, Shure PSM 1000). This option allows to classify the devices alphabetically (1000 above 900).

The section:

Sets the default settings for import of TV channels via public databases (see section 9.1).

The second part of Startup/Global determines the evaluation parameters of frequencies:

All these parameters are used when creating a new document. Local Options window allows you to adapt them to his document (section 2.5.4).

The "Print Summary / Document Detail" option displays or not the document summary and device details (tolerance, separation, etc.) when printing.

"Auto Start Var Dev »enables / disables the automatic value of the start frequency of a variable frequency device. During the automatic evaluation of the devices, these are classified in order of departure (in reality it is a little more

than that), with this option the evaluation is done in this way: the first device keeps its frequency of original start, the first different device will use a higher starting frequency than the last frequency of the previous device with an automatic deviation. A small example:

Group 1 - Section 1			Group 1 - Section 1		
#1 - BTR-800 E88 RX	4 Fr 470.100 - 471.300	470.100 - 487.900	471.300	487.900	#1 - BTR-800 E88 RX
#1 - beyerdynamic TG 1000 A	2 Fr 536.400 - 536.900	470.100 - 788.900			536.900

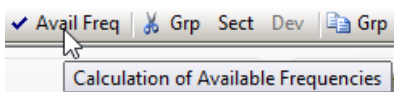
Instead of:

Group 1 - Section 1			Group 1 - Section 1		
#1 - BTR-800 E88 RX	4 Fr 470.100 - 471.300	470.100 - 487.900	471.300	487.900	#1 - BTR-800 E88 RX
#1 - beyerdynamic TG 1000 A	2 Fr 471.900 - 472.650	470.100 - 788.900	472.650		

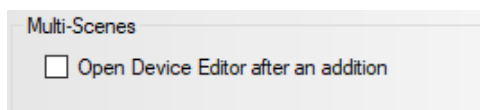
This method of evaluation allows to leave a little space between the devices if possible.

Disable Available frequencies

This option allows you to deactivate the calculation of available frequencies when creating a new document (used for opening an IAS file). This option can be reactivated in the global and detailed view.



Finally, if you have a “Multi-Scene” license, an additional option appears when the “Options” module is called from the “Multi-Scene” view:



This option automatically opens the device editor when each device is added.

## 25.2 TX Power - Adjust Influence

This option allows to define the influence of the transmit power level:

Options - Adjust Influence of Transmit Power ✕

**General**

[TV Chnls - NTSC](#)

[Frequencies Type](#)

[Startup / Global](#)

Define the influence of transmit power on Tolerance of Frequency:

Power	Influence Tolerance 2 TX	Influence Tolerance 3 TX	Influence Tolerance 5 TX
Level 1 Normal (1-50 mw)	0 kHz	0 kHz	0 kHz
Level 2 Medium (51-150 mw)	<input type="text" value="25"/> kHz	<input type="text" value="25"/> kHz	<input type="text" value="0"/> kHz
Level 3 High (151-400 mw)	<input type="text" value="75"/> kHz	<input type="text" value="50"/> kHz	<input type="text" value="25"/> kHz
Level 4 Very high (> 400 mw)	<input type="text" value="125"/> kHz	<input type="text" value="75"/> kHz	<input type="text" value="50"/> kHz

[Values used on new document only](#)

The power level of a transmitter influences a receiver.

To understand the effects of the power, let us take a small example. If the Tolerance (2 TX, 3 TX or 5th order) of a device is set at 50 kHz, this means that all the intermodulations of 50 kHz and more on both sides of the carrier will be tolerated. If one of the frequencies causing this intermodulation at 50 kHz is due to a carrier of stronger power, its effect on the reception can thus be perceptible.

To take care of these effects, EazyRF allows to add an automatic correction to the calculations of intermodulations if one of the carriers who caused this tolerated intermodulation is of stronger power.

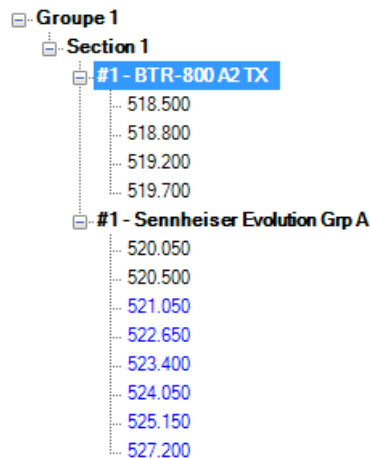
The power was separated in four categories: Normal (1-50 mW), Medium (51-100 mW), High (151-400 mW) and Very High (more than 400 mW).

For each level, simply set a different correction for Tolerance 2 TX, 3 TX and 5 TX (5th order).

The normal level has no correction. The higher the level, the greater the influence will be marked.

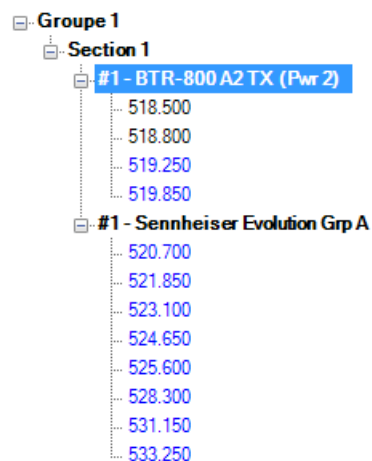
Note that this modification in one of the Tolerances has not the same effect as if made directly to a receiver, because at this time it is all the frequencies of the device that will be affected, not only those of higher power level.

Let's take a small example:

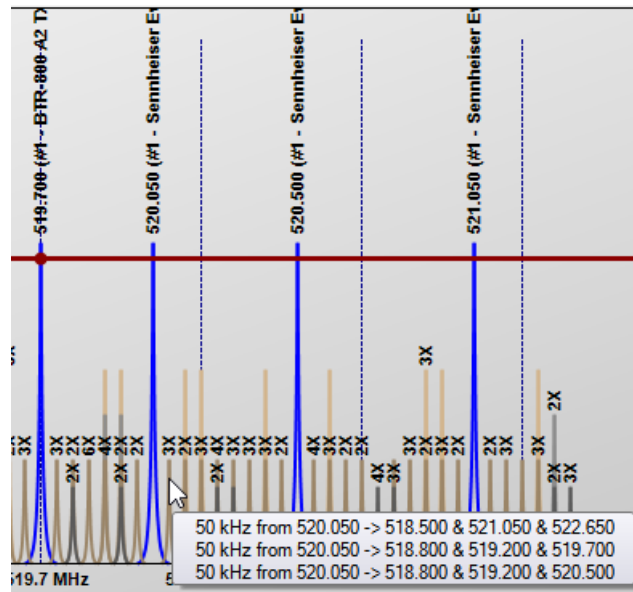


One BTR and one Evolution in the same frequency region.

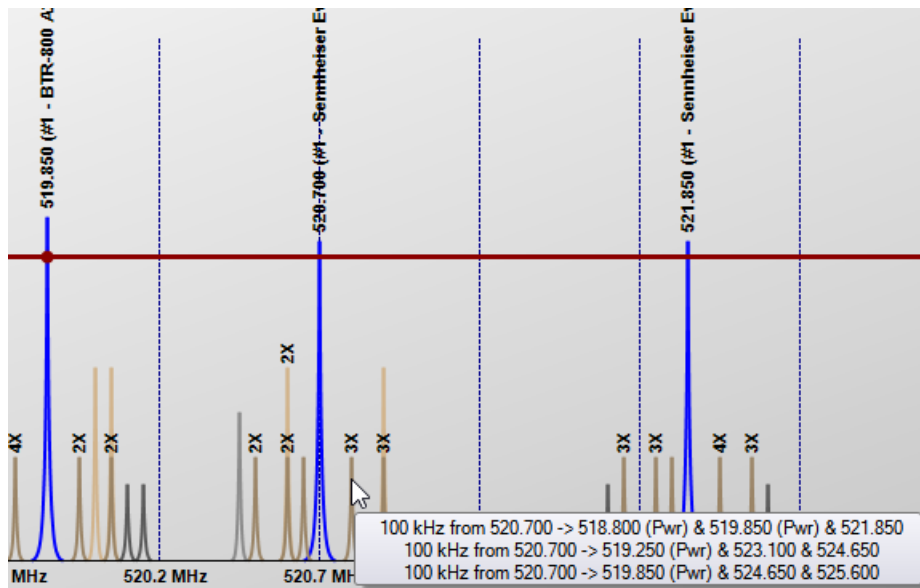
With the power of TX of BTR set to level 2, the frequencies obtained are:



For the BTR-800, the power change gives the same results as if we change the parameters of tolerance for the device. For Evolution, the result is not the same. Before the change, the carriers of the BTR adds 3rd order intermodulation at 50 kHz (default value):

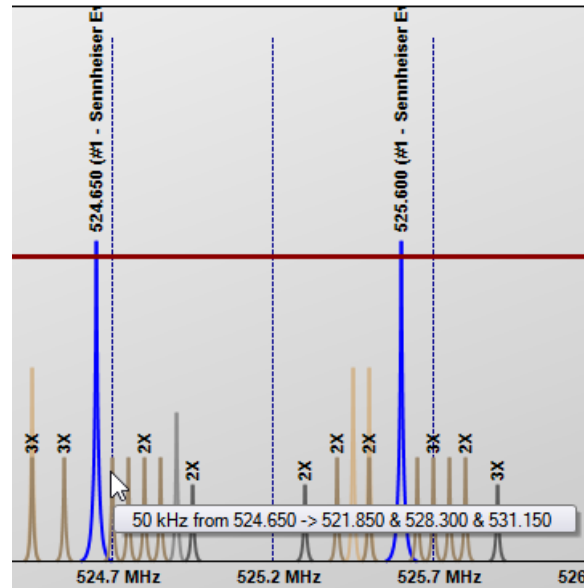


After modification of the power of the BTR we obtain:



518.500 and 518.800 two frequency of the BTR cannot create any more IM in 50 kHz on the Evolution because the automatic adjustment of its effect of TX power prevents the other devices from being perturbed by those of the BTR WITHOUT CHANGING the Tolerance of the Evolution.

If we look the intermodulations of the Evolution:

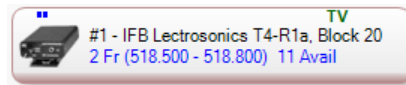


The frequencies of the Evolution (with its Tolerance to 50 kHz) influences it as intended. While the BTR has a superior influence because of its power and the effect of automatic adjustment.

We absolutely cannot recreate this effect by adjusting the tolerance of Evolution.

For each document, the parameters of TX Power can be adjusted separately by the Local Options (section 2.3).

In Global and Detailed Views, if a device has a transmit power level higher than normal, an indicator appears:



Warning: the parameters of influences of tolerance are global to a document, so if you copy a device from one document to another one, the device will take values of the document where it is pasted.



## Appendix 1 - WMAS Devices

EazyRF now supports devices using WMAS (Wireless Multichannel Audio Systems) mode transmission.

Initially, Shure ADPSM devices will be supported. Subsequently, Sennheiser Spectera devices will follow, when the documentation is published.

### Shure ADPSM

The Shure Axient Digital PSM series supports four transmission modes: Wideband multichannel, narrowband, analog FM and standard.

The “Multichannel Wideband” mode is new and uses WMAS, allowing the transmission of four stereo audio channels on the same frequency.

It goes without saying that the bandwidth used is greater than that of a standard device, but less than using four separate frequencies.

### Definition of an ADPSM device

The device list editor has been adapted to this new operating mode:

Add Var Add Fix Duplicate Edit Delete

- Shure ADTD PSM X57 P2 FM
- Shure ADTD PSM X57 P2 NB
- Shure ADTD PSM Z16 P1 FM
- Shure ADTD PSM Z16 P1 NB
- Shure ADTD PSM Z16 P2 FM
- Shure ADTD PSM Z16 P2 NB
- TV Shure ADTQ PSM G53 FM
- TV Shure ADTQ PSM G53 NB
- TV Shure ADTQ PSM G54 FM
- TV Shure ADTQ PSM G54 NB
- TV Shure ADTQ PSM G55 FM
- TV Shure ADTQ PSM G55 NB
- TV Shure ADTQ PSM G56 4CH
- TV Shure ADTQ PSM G56 FM
- TV Shure ADTQ PSM G56 NB
- TV Shure ADTQ PSM G56J FM
- TV Shure ADTQ PSM G56J NB
- TV Shure ADTQ PSM G56K FM
- TV Shure ADTQ PSM G56K NB
- TV Shure ADTQ PSM G57 4CH**
- TV Shure ADTQ PSM G57 FM
- TV Shure ADTQ PSM G57 NB
- TV Shure ADTQ PSM G63 4CH
- TV Shure ADTQ PSM G63 FM
- TV Shure ADTQ PSM G63 NB
- TV Shure ADTQ PSM H54 4CH
- TV Shure ADTQ PSM H54 FM
- TV Shure ADTQ PSM H54 NB
- TV Shure ADTQ PSM K54 4CH
- TV Shure ADTQ PSM K54 FM
- TV Shure ADTQ PSM K54 NB
- TV Shure ADTQ PSM K55 4CH
- TV Shure ADTQ PSM K55 FM
- TV Shure ADTQ PSM K55 NB
- TV Shure ADTQ PSM K56 FM
- TV Shure ADTQ PSM K56 NB
- Shure ADTQ PSM K58 4CH
- Shure ADTQ PSM K58 FM
- Shure ADTQ PSM K58 NB
- TV Shure ADTQ PSM K60 4CH

Model

Source

Based on:

Type: In-Ear

Power Level: 1

Simult Freq Nb: 1

Start: 470.125

Stop: 607.875

Increment: 0.025

5511 Freq

Tolerance 2 TX: 500

Tolerance 3 TX: 0

Separation: 800

Image Frequency: If undefined, none

Filter: 28.00

Auto Interference limit: 0.000

TV Channels:

- 15 (476-482 MHz) CKMI Gl
- 17 (488-494 MHz) CJNT Cit
- 19 (500-506 MHz) CBFT R-4
- 21 (512-518 MHz) CBMT CE
- 26 (542-548 MHz) CIVM T-4

Active

Operating mode: WMAS ADPSM

Channels Nb: 4

Save

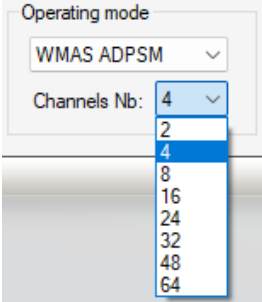
Cancel

The operating mode can be defined by:

Operating mode

- WMAS ADPSM
- Standard
- WMAS ADPSM

As well as the number of audio channels in WMAS ADPSM mode:



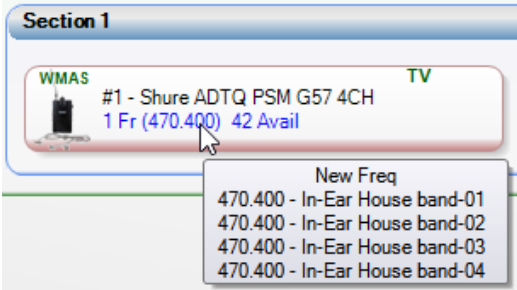
The parameters used are those recommended by Shure in standard mode.

For the moment, Shure uses only two ADPSM models: the 2-channel stereo ADTD and the 4-channel stereo ADTQ.

The frequency bands used are quite like those of standard devices.

**Using an ADPSM device**

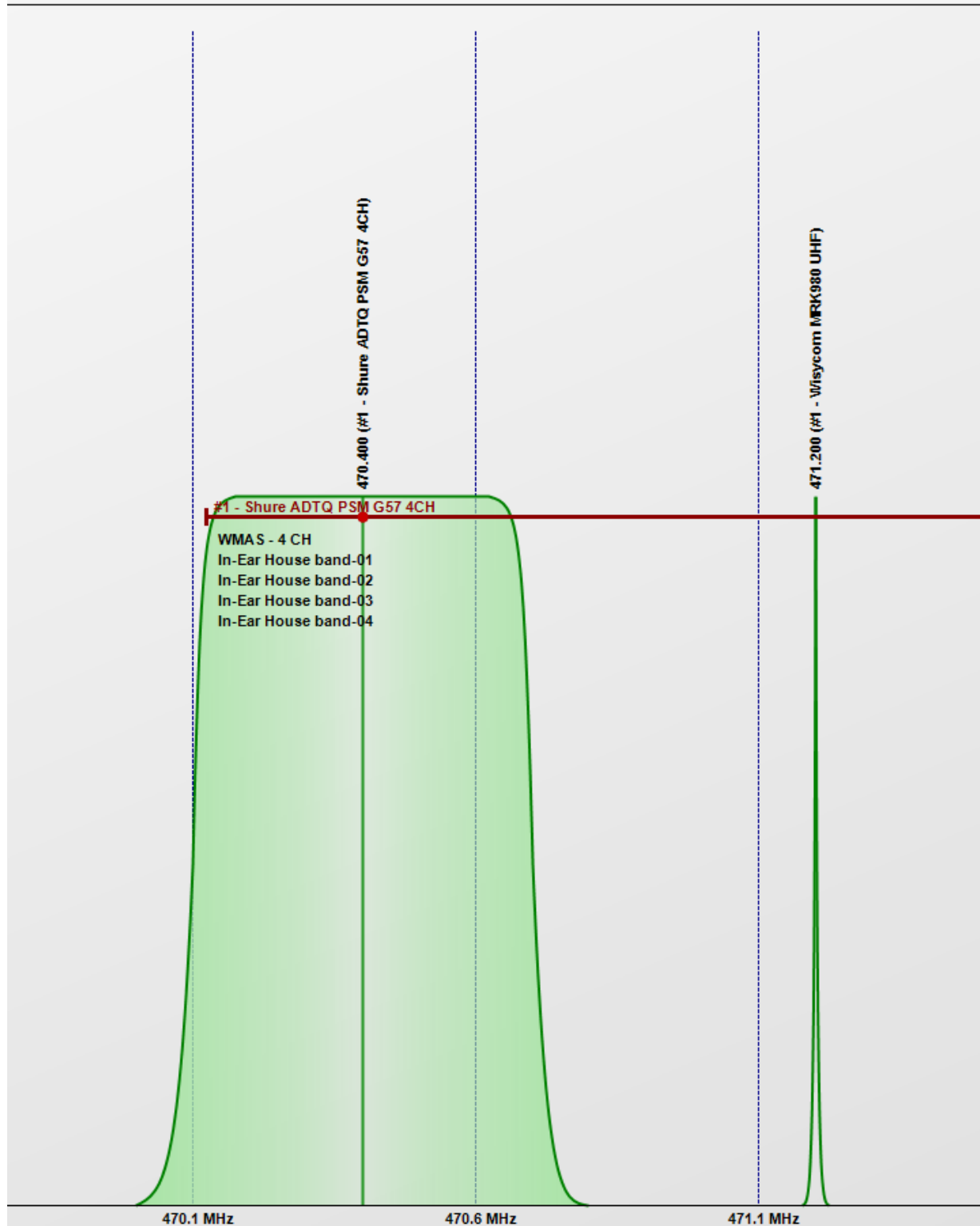
If we add a Shure ADTQ PSM G57 4CH to EazyRF, we get:



No	Description	1 Freq (4 A)
1.1	In-Ear House band-01	470.400 14
1.2	In-Ear House band-02	470.400 14
1.3	In-Ear House band-03	470.400 14
1.4	In-Ear House band-04	470.400 14

The four audios are on the same frequency, and we see an indicator to illustrate the locking of these, if we change the value of the frequency, it changes for the 4 audios.

The "Intermodulations" module displays a representation of the spectrum occupied by a frequency using WMAS mode compared to a standard frequency.



It should be noted that the value of an ADPSM frequency must be aligned with a TV channel. It must start at least 400 kHz from the start frequency of a channel and end at least 400 kHz from the end of the channel. It is not possible to program a frequency that overlaps two channels, EazyRF handles these restrictions.

## Equipment Module

The Equipment Module allows you to assign ADPSM equipment to the Shure Wireless Workbench 7.4 and later file:

In Ear (6)							
Model	ID	Band	Channel	Name	Freq	EazyRF devices	EazyRF Freq
ADTD PSM 4CH	ADTD 1	G57 (470.125 - 607.875)	Ch 1	Spare-5	471.200	#1 - Shure ADTD PSM G57 4CH	471.200 - Spare-5
ADTD PSM 4CH	ADTD 1	G57 (470.125 - 607.875)	Ch 2	Spare-6	471.200		471.200 - Spare-6
ADTQ PSM 4CH	ADTQ 1	G57 (470.125 - 607.875)	Ch 1	Band-01	470.400	#1 - Shure ADTQ PSM G57 4CH	470.400 - Band-01
ADTQ PSM 4CH	ADTQ 1	G57 (470.125 - 607.875)	Ch 2	Band-02	470.400		470.400 - Band-02
ADTQ PSM 4CH	ADTQ 1	G57 (470.125 - 607.875)	Ch 3	Band-03	470.400		470.400 - Band-03
ADTQ PSM 4CH	ADTQ 1	G57 (470.125 - 607.875)	Ch 4	Band-04	470.400		470.400 - Band-04

## Devices List

The list of Shure ADPSM devices is available on the website. To perform the update, simply use the function: Options / Devices / Update and click on the "Additional Devices" command (bottom left). The new devices are available in the Shure ADPSM file. See user manual section 10.6 for detailed operation.

## Sennheiser Spectera

Sennheiser has developed a new WMAS mode device with a capacity of 64 audio channels (32 inputs, 32 outputs) using two wideband RF carriers (6 or 8 MHz) in the UHF or 1G4 band. This device transmits and receives multiple audio signals simultaneously.

Currently there is only one handheld receiver/transmitter available, the Spectera SEK, in the UHF or 1G4 band. This bidirectional bodypack allows audio reception (IEM/IFB) and mic/line audio transmission.

The Spectera base can transmit in both UHF or 1G4 bands, but the transceivers in only one.

The user must have a license for use (included with purchase) and it is only valid in one country.

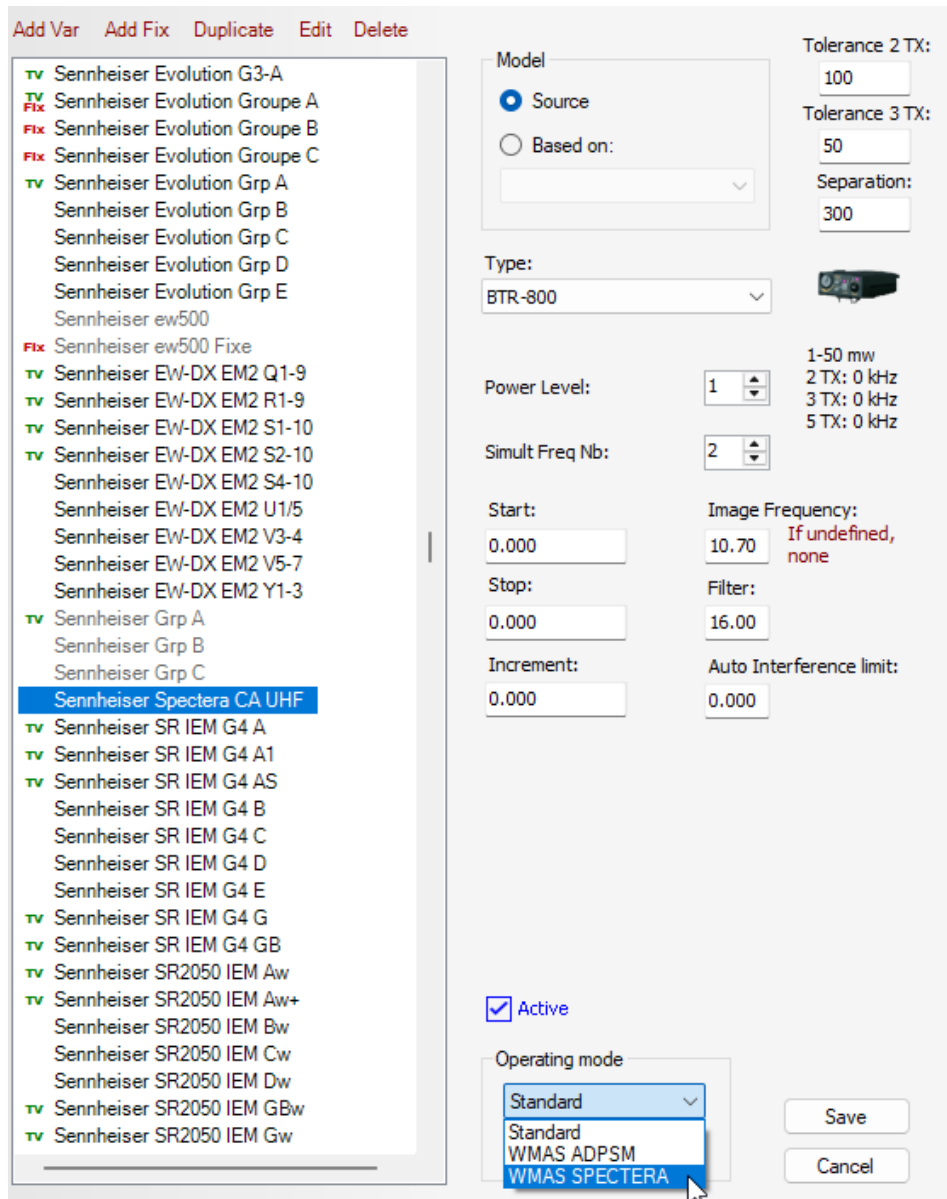
The Spectera occupies a wide RF bandwidth and does not generate intermodulations like a TV transmitter.

EazyRF supports Spectera in the same way as TV channels, i.e. the user must determine which channels to use. EazyRF allows you to select a channel from a scan file data, which makes it easier to use.

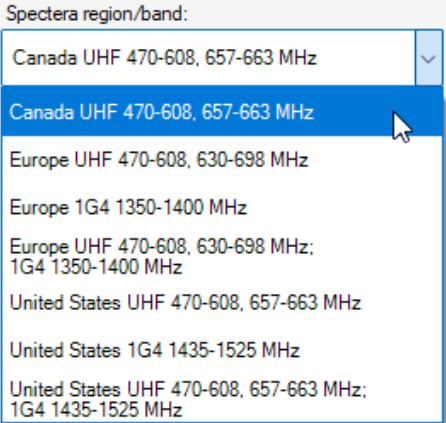
EazyRF's Spectera support is very similar to TV channel management, you don't calculate the frequencies used, you assign them. And EazyRF takes care of not allocating frequencies in these frequency bands.

## Definition of a Spectera device

A new operating mode has been added to the equipment list editor:

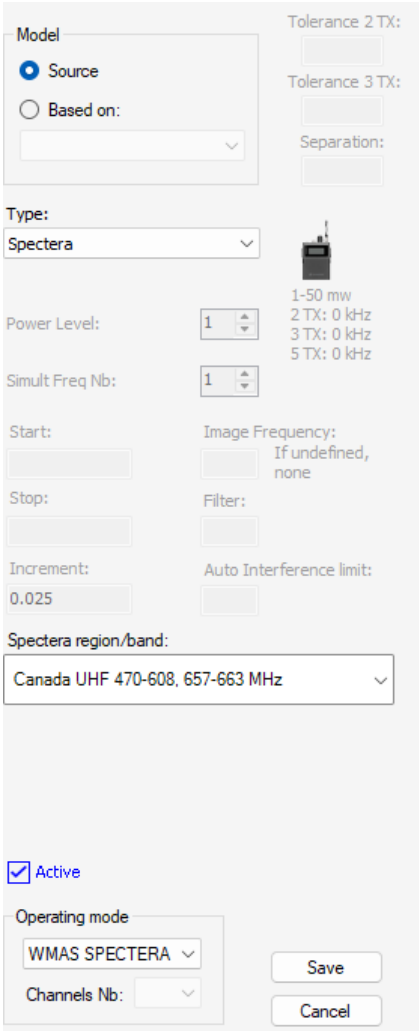


After selecting the WMAS SPECTERA operating mode, a region and frequency band selection appears:



Sennheiser offers 12 license zones (countries and regions), EazyRF only covers Canada, USA and Europe. Since Sennheiser's SEK transceiver only covers one frequency band (UHF or 1G4), a preselection was chosen by EazyRF. Please note that the 1G4 band is not available in Canada.

All standard device settings are disabled because they do not apply:



## Using a Spectera device

The Sennheiser Spectera offers 7 reception modes (mic/line), 4 transmission modes (IEM/IFB) mono and 4 other stereo modes.

When adding a Spectera device, a window allows you to define the desired mode and the number of channels:

#1 - Sennheiser Spectera CA UHF - Canada UHF 470-608, 657-663 MHz
✕

Section 1 - Group 1

Description:  Scans

RF1:  RF2:  Bandwidth:  Margins:  MHz

RF1 and RF2: center frequencies in MHz or channel number

Mic/line: Mono link modes (RX)

Raw Low Latency, Max: 16, 12.5 %, PCM, Latency: 1.0 ms, Range: Reduced	Quantity: 0
Raw, Max: 32, 6.25 %, PCM, Latency: 1.6 ms, Range: Reduced	Quantity: 0
Live Low Latency, Max: 16, 12.5 %, SeDAC, Latency: 1.0 ms, Range: Extended	Quantity: 0
Live, Max: 32, 6.25 %, SeDAC, Latency: 1.6 ms, Range: Extended	Quantity: 0
Live Link Density, Max: 64, 3.13 %, SeDAC, Latency: 2.7 ms, Range: Standard	Quantity: 0
Max Range, Max: 32, 6.25 %, OPUS, Latency: 9.9 ms, Range: Maximum	Quantity: 0
Max Link Density, Max: 128, 0.78 %, OPUS, Latency: 15.2 ms, Range: Reduced	Quantity: 0

IEM/IFB: Mono link modes (TX)

Live, Max: 32, 6.25 %, SeDAC, Latency: 1.6 ms, Range: Extended	Quantity: 0
Live Link Density, Max: 64, 3.13 %, SeDAC, Latency: 2.7 ms, Range: Standard	Quantity: 0
Max Range, Max: 32, 6.25 %, OPUS, Latency: 9.9 ms, Range: Maximum	Quantity: 0
Max Link Density, Max: 128, 0.78 %, OPUS, Latency: 15.2 ms, Range: Reduced	Quantity: 0

IEM/IFB: Stereo link modes(TX)

Live Ultra Low Latency, Max: 8, 25 %, SeDAC, Latency: 0.7 ms, Range: Extended	Quantity: 0
Live Low Latency, Max: 16, 12.5 %, SeDAC, Latency: 1.1 ms, Range: Extended	Quantity: 0
Live, Max: 32, 6.25 %, SeDAC, Latency: 1.6 ms, Range: Standard	Quantity: 0
Live Link Density, Max: 64, 3.13 %, SeDAC, Latency: 2.7 ms, Range: Reduced	Quantity: 0

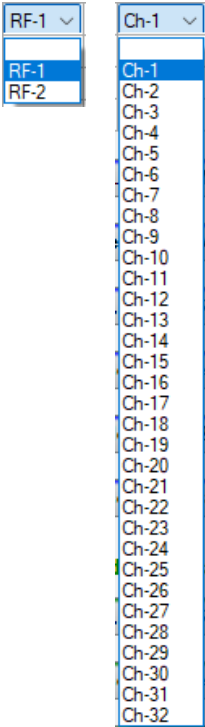
1 Base

F1: 0.00 %, F2: 0.00 %

After defining the number of channels, the relevant area opens to allow information to be entered:

Raw, Max: 32, 6.25 %, PCM, Latency: 1.6 ms, Range: Reduced				Quantity: 4
Description: Loud				
1	RF-1	Ch-1	Vocal 1	
2	RF-1	Ch-2	Vocal 2	
3	RF-1	Ch-3	Vocal 3	
4	RF-1	Ch-4	Vocal 4	

You can define the RF frequency used (1 or 2), the channel (1 to 32), the description and a comment.



As with the “Description” column, the ‘RF’ or “CH” column can be duplicated or incremented, with these differences: the left mouse button opens the drop-down selection box, so the right mouse button must be used. In addition, the RF column can only be duplicated, while the Ch column can only be incremented.

To increment, use Ctrl + Alt and to duplicate, Alt only.

Note that each transmission mode has a limited number of usable channels.

**Transmit frequencies**

The use of a Spectera in the UHF band comes with restrictions depending on the regulations of each country. The main use of the UHF band remains the transmission of television signals. Therefore, it is necessary to follow the rules of the transmission mode of each country.

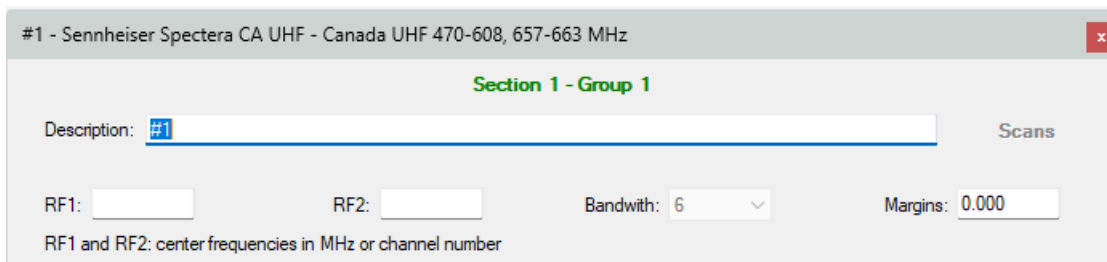
In Canada and the USA, TV signals occupy a 6 MHz band. In Europe, they are mainly transmitted on 8 MHz channels, with a few exceptions.

Even though the Spectera can transmit on frequencies that vary in increments of 0.025 MHz, Sennheiser has opted to use it consistently with TV channels.

In North America, the maximum bandwidth used by the Spectera is 6 MHz. In Europe, regulations allow the use of a 6 or 8 MHz band.

So, for use in UHF mode, the values of the transmission frequencies (or channels) will be based on the alignment of TV channel frequencies.

#### Enter F1 and F2 frequencies:



#1 - Sennheiser Spectera CA UHF - Canada UHF 470-608, 657-663 MHz

Section 1 - Group 1

Description:  Scans

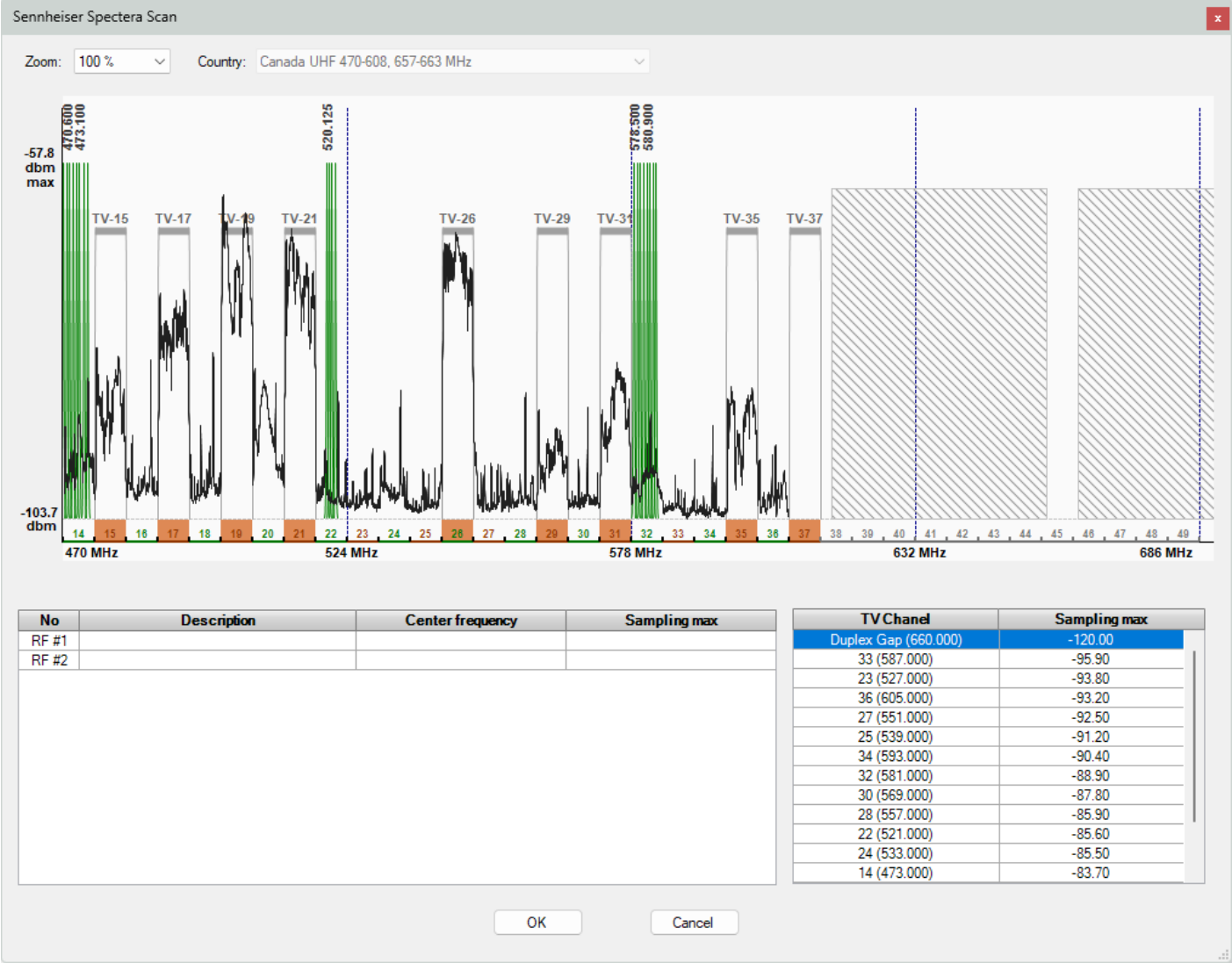
RF1:  RF2:  Bandwidth: 6 Margins: 0.000

RF1 and RF2: center frequencies in MHz or channel number

EazyRF uses the median value of a TV channel's bandwidth, so for channel 14 in North America (470-476 MHz), the frequency value is 473 MHz. The entry is simplified, whatever value is entered between 470 and 476, it will be adjusted to 473 MHz. You can also enter a channel number to display its frequency, in this case 14 will give 473 MHz.

In North America, the "Duplex Gap" (657-663 MHz) can also be used.

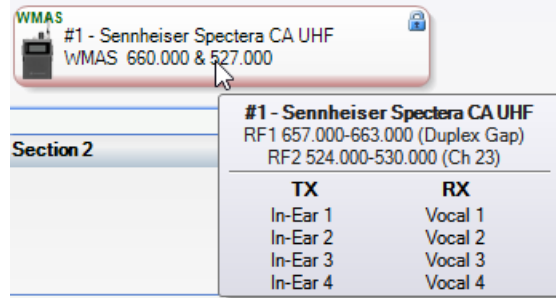
A value can also be assigned from the document or group scan file:



EazyRF makes an evaluation of the sampling level for each unused TV channel and ranks the list in ascending order of the maximum values found. Simply drag a selection onto the F1 or F2 frequency table.

**Using a Spectera device**

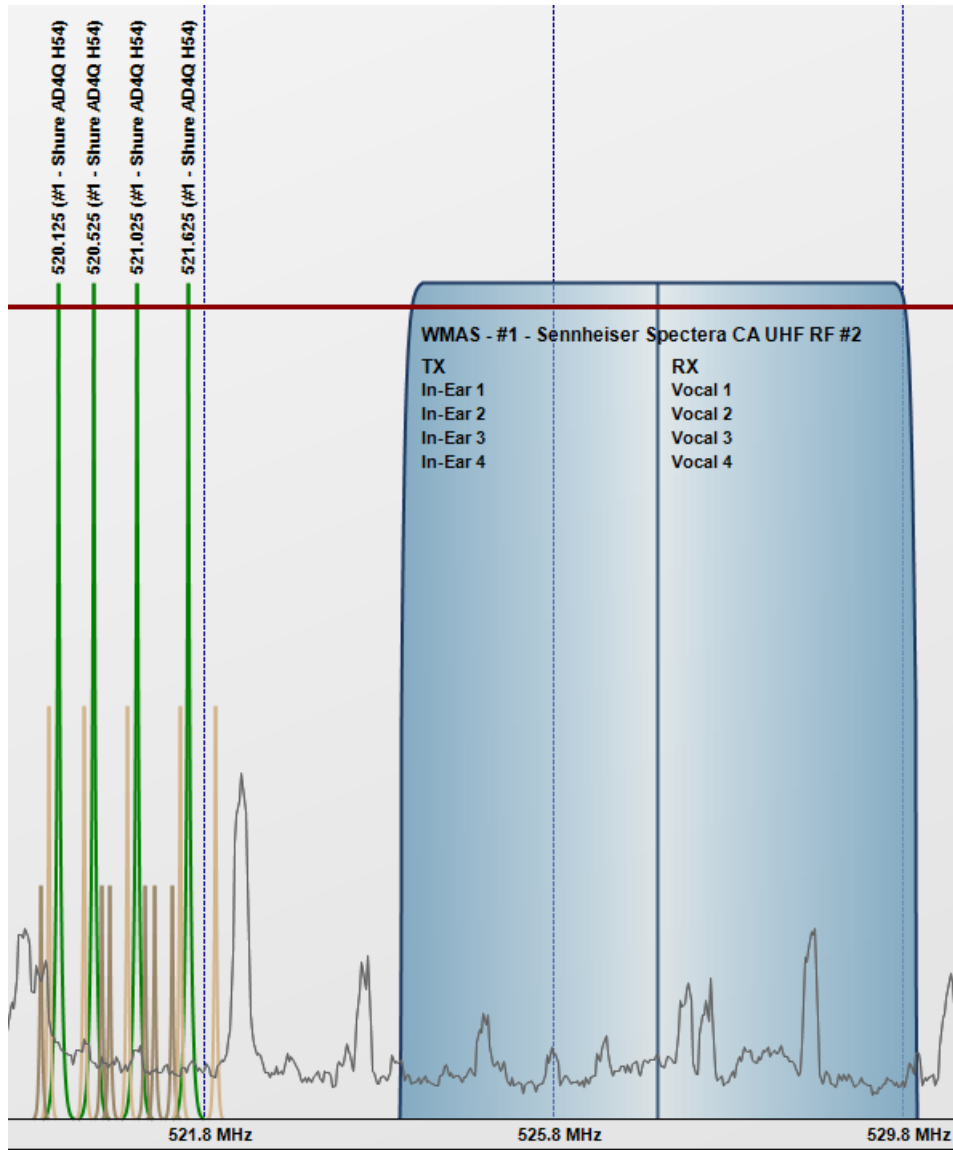
If we add a Sennheiser Spectera Canada UHF, we get this after defining RF1 and RF2 and using a few channels:



**Mic/line: Mono link modes (RX)**

Raw Low Latency, Max: 16, 12.5 %, PCM, Latency: 1.0 ms, Range: Reduced				Quantity: 0
Raw, Max: 32, 6.25 %, PCM, Latency: 1.6 ms, Range: Reduced				Quantity: 4
Description: Loud				
1	RF-1	Ch-1	Vocal 1	
2	RF-1	Ch-2	Vocal 2	
3	RF-1	Ch-3	Vocal 3	
4	RF-1	Ch-4	Vocal 4	
Live Low Latency, Max: 16, 12.5 %, SeDAC, Latency: 1.0 ms, Range: Extended				Quantity: 0
Live, Max: 32, 6.25 %, SeDAC, Latency: 1.6 ms, Range: Extended				Quantity: 0
Live Link Density, Max: 64, 3.13 %, SeDAC, Latency: 2.7 ms, Range: Standard				Quantity: 0
Max Range, Max: 32, 6.25 %, OPUS, Latency: 9.9 ms, Range: Maximum				Quantity: 0
Max Link Density, Max: 128, 0.78 %, OPUS, Latency: 15.2 ms, Range: Reduced				Quantity: 0
Live, Max: 32, 6.25 %, SeDAC, Latency: 1.6 ms, Range: Extended				Quantity: 4
Description: Loud				
1	RF-1	Ch-11	In-Ear 1	
2	RF-1	Ch-12	In-Ear 2	
3	RF-1	Ch-13	In-Ear 3	
4	RF-1	Ch-14	In-Ear 4	

And in the “Intermodulations” view:



And the report:

Group 1				
Section 1				
#1 - Sennheiser Spectera CA UHF				
RF1 657.000-663.000 (Duplex Gap), RF2 524.000-530.000 (Ch 23)				
RX: Raw Loud				
Vocal 1	RF-1, Ch-1	RF-1, Ch-2	Vocal 2	
Vocal 3	RF-1, Ch-3	RF-1, Ch-4	Vocal 4	
TX: Live Loud				
In-Ear 1	RF-1, Ch-11	RF-1, Ch-12	In-Ear 2	
In-Ear 3	RF-1, Ch-13	RF-1, Ch-14	In-Ear 4	

**Devices list**

The list of devices for Canada UHF, USA UHF, USA 1G4, Europe UHF and Europe 1G4 is available on the website. To update, simply go to Options / Devices / Update and click on the “Additional devices” command (bottom left). The new devices are available in the Sennheiser Spectera file. See section 10.6 of the user guide for detailed instructions.