INITIAL SETUP Imagen AR-SPOT (Versión 1.5a)

The first thing we must do is download the Image, for this we enter www. https://www.argentina-room.dns-cloud.net/ and click on the banner of the image that appears above.

Once the last Image **ar-spot_1.5a-10092022.zip** has been downloaded, we must burn the image in a Micro SD memory (a Micro SD card of no less than 8 GB is recommended), You can do it with the Balena Etcher program or the one that you use regularly. SUPPORTED RASPBERRY: PI ZERO 2W - PI 3A+ - PI 3B - PI 3B+ onwards
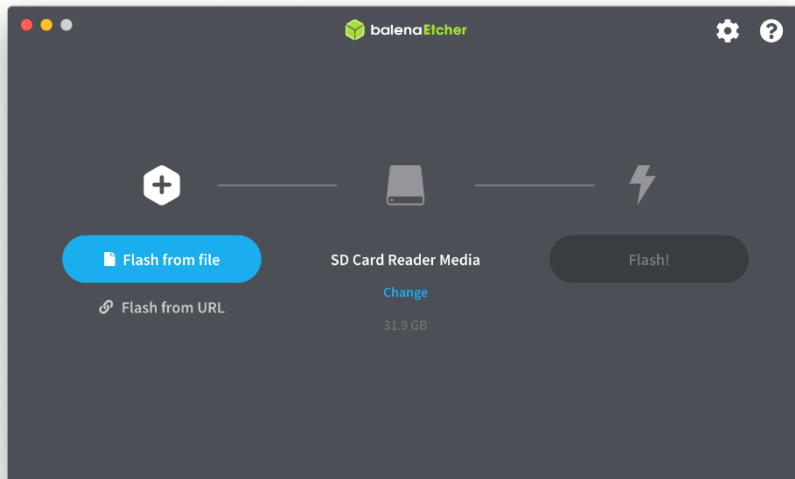

Generate file to connect via WiFi:

Finally we will need to create a file for WiFi connection, which we will save on the card. We will generate this file with the program **wifi_builder v1.0** in which it is attached in the .ZIP file together with the image (this would be in case we do not want to connect it via ethernet, but skip this step and connect it directly to the network cable). The data to provide is the WiFi code (AR), the SSID (Name of our WIFI) where our Raspberry is going to connect and the PSK (Wi-Fi network password). This process generates a file called «**wpa_supplicant.conf**» in the folder where we have the program, which we save in the BOOT (root) of the image in our micro SD *** From Version 1.3a the AUTO ACCESS POINT function was added**

Then we remove the SD from the PC and put it in our Raspberry, turn on and wait for the ar-spot image to start.

Acceder al panel de Control de la AR-SPOT

To access the Image we must do it from the remote program VNC Wiewer, for that we must download the program from this link. Then we must know which IP has been assigned to our Raspberry, we can use any program to see our IP connected to our Router or simply whoever has more knowledge can directly access the Router and see it, we place the assigned IP in the VNC Wiewer and we connect . Once connected, it will ask us for the username and password that for the ar-spot image are: User: pi Password: argroom and we accept.
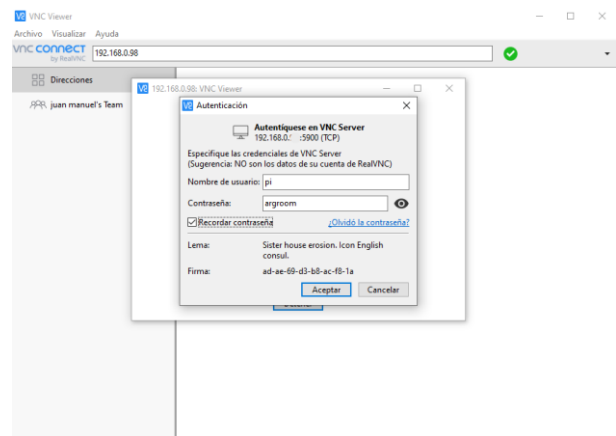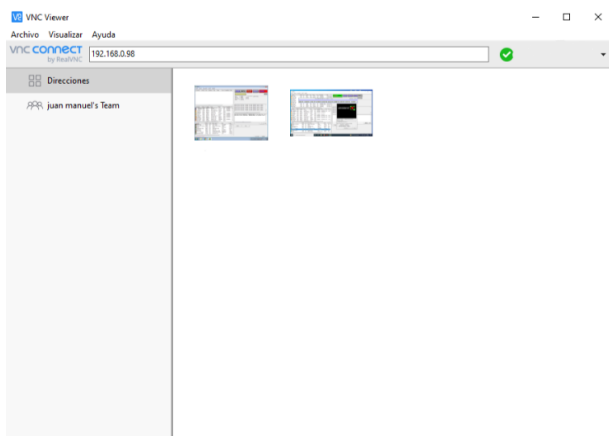
Once started, the following window will appear
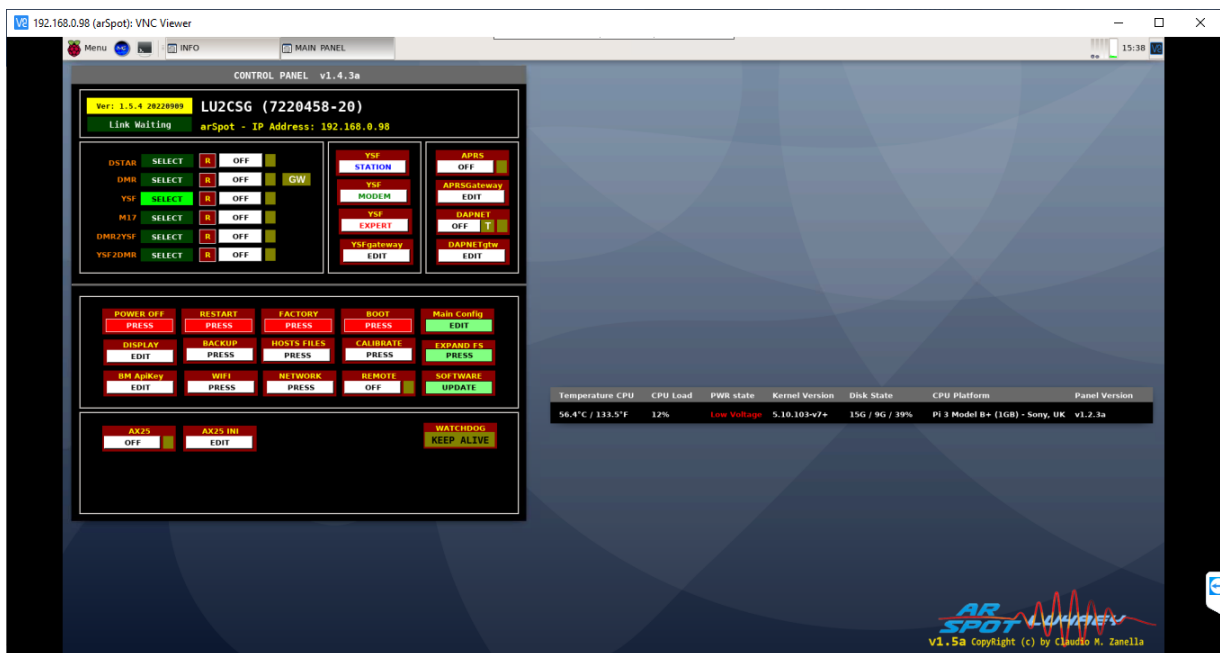
Let's know a little about the different basic configurations of the Ar-Spot Image.
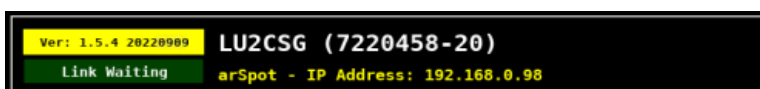
 In the upper left margin we can see the current version of

Our image, the IP address obtained from our router, as well as our License and DMR ID, which must be previously loaded by entering **Main Config, which will be explained later in the instructable.**

Mode Selection Panel
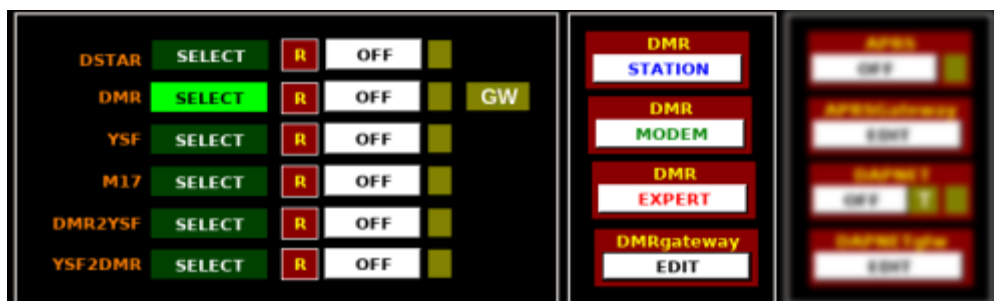
(Modes Panel) In this Menu we will choose the **Mode** in which we want to operate our Ar-Spot Image We see the first 3 conventional modes **DSTAR/DMR/DMRGW/YSF** for which we will press each green button to select each mode. As of version 1.4 we incorporate the **M17 mode** which can be operated (mode in full development). There are also 2 crossings **DMR2YSF** and **YSF2DMR** these are to enter for example via YSF reflector and exit through the DMR reflector (**YSF2DMR**) and vice versa.

By clicking on each mode, the menu on the right will change which will enable us for each mode 4 configuration menus (**STATION – MODEM – EXPERT – EDIT**)

STATION

Menú (**STATION**) We will load the necessary data of our station for the initial configuration of the different modes such as: DMR/CCS7 ID and its SSID, Callsign, Subfix, Latitude, Longitude etc... (depending on the options of the different modes).

MODE STATION SETUP
D-STAR

DMR/CCS7 ID	7220458	20	SSID
RPT1 Callsign	LU2CSG	B	MODULE
RPT2 Callsign	LU2CSG	G	MODULE
Reflector	DCS000	A	MODULE
ircDDBGateway	*********	Password
ircDDBGateway	Espanol	Language

☑ Callsign Routing   ☑ Use DPlus for XRF   ☐ Startup   ☐ Reconnect

Latitude	-34.63733	Degrees
Longitude	-58.41362	Degrees
Location	CABA	
URL	www.google.com	
Country	do AR-SPOT TEST V1.5 LU2C	

APPLY

MODE STATION SETUP
YSF - FUSION

DMR/CCS7 ID	7220458	20	SSID
Station Callsign	LU2CSG	Subfix	ND
Latitude	0	Degrees
Longitude	0	Degrees
Name	LU2CSG_arSpot 1.5a	
URL	www.google.com	
Description	Multi-Mode Digital Voice	
YSF Master	YSF38654 - AR-ROOM - FUSIONII	
FCS Master	FCS00100 - Repeater	

REFLECTOR
☑ YSF   ☐ FCS   0 INACTIVITY TIMEOUT

Options

APPLY

MODE STATION SETUP
DMR

DMR/CCS7 ID	7220458	20	SSID:
Station Callsign	LU2CSG	
Latitude	0.0	Deg
Longitude	0.0	Deg
Location	Nowhere	
URL	www.google.com	
Description	Multi-Mode Digital Voice	
DMR Master	BM 3021 Canada	
Password	********	☐ View ☐ Fixed
DMR+ Options		CLEAR

APPLY

MODE STATION SETUP
DMR GW

Station | DMRGateway

DMR/CCS7 ID	7220458
Station Callsign	LU2CSG
Startup Dst Id	7229	DEFAULT TG
Latitude (Deg)	0.0
Longitude (Deg)	0.0
Location	Nowhere
URL	www.google.com
Description	Multi-Mode Digital Voice

APPLY

MODE STATION SETUP
DMR GW

Station | DMRGateway

BM Master	BM 3021 Canada	
BM Password	********	☐ VIEW
BM SSID	0	BM Net ☐ DISABLE
DMR+ Master	DMR+ IPSC2-Australia	
DMR+ Options		
DMR+ SSID	0	DMR+ Net ☐ DISABLE
XLX Master	XLX 000	
XLX Module	A	XLX Net ☑ ENABLE
DMR Color Code	1	
DMR EmbeddedLCOnly	☐ DISABLE	
DMR DumpTAData	☑ ENABLE	

APPLY

MODE STATION SETUP
M17 PROYECT

DMR/CCS7 ID	7220458	20	SSID
Station Callsign	LU2CSG	Suffix	H
Latitude	0.0	Degrees
Longitude	0.0	Degrees
Name	Nowhere	
URL	www.google.com	
Description	Multi-Mode Digital Voice	
M17 Master	'-190 - 190.194.12.53 - 17000	
Module	A	

APPLY

Menú (**MODEM**) We are already going directly into the configuration of our MMDVM board, so we must be careful when changing the adjustment values, although each MMDVM board comes with its respective settings indication booklet, sometimes we may have to adjust them.

This screen is the same for all modes, taking into account that for each mode the configurations are saved independently of each other, thus being able to leave our MMDVM configured for all available modes without having to change the already established settings.

EXPERT

Menú (**EDIT**) You will find the MMDVM configuration in "Expert" mode, similar to the previous menu, but with more complex and specific settings.

Like the previous menu, this screen is the same for all modes, taking into account that for each mode the settings are saved independently of one another, thus being able to leave our MMDVM configured for all available modes without having to change the settings anymore. established.

EDIT

Menú (**Gateway EDIT**) You will find the configuration of the MMDVM in "Expert" mode corresponding to the Gateway where you can adjust and change the different options related to the APRS in a complex and specific way of any selected mode.

Menú Client APRS y DAPNET

 (**APRS ON/OFF**) Turning on and off the positioning of our MMDVM board (APRS client)
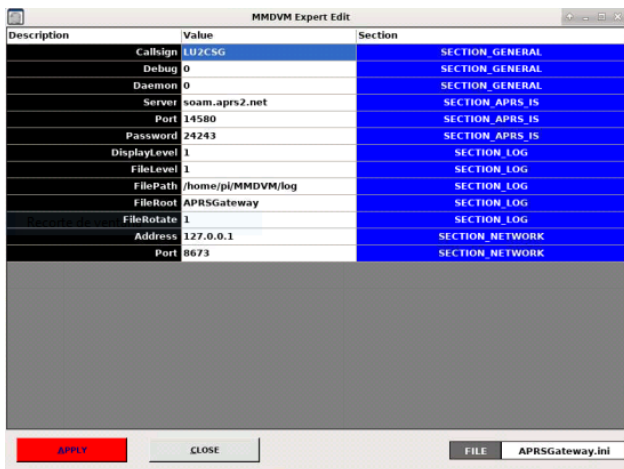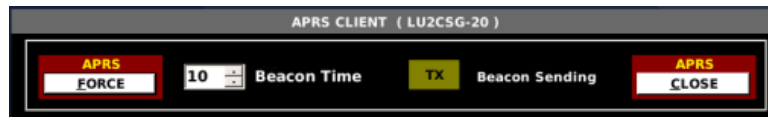
 APRSGateway EDIT

(**APRSGateway**) In this panel we configure everything related to the APRS Gateway. The image itself already has an APRS Client from which it takes data from our image and Raspberry to position it in APRS.FI or APRS DIRECT showing information on the maps and work frequency.

(**DAPNET ON/OFF**) Turning on and off the DAPNET service (Pager)
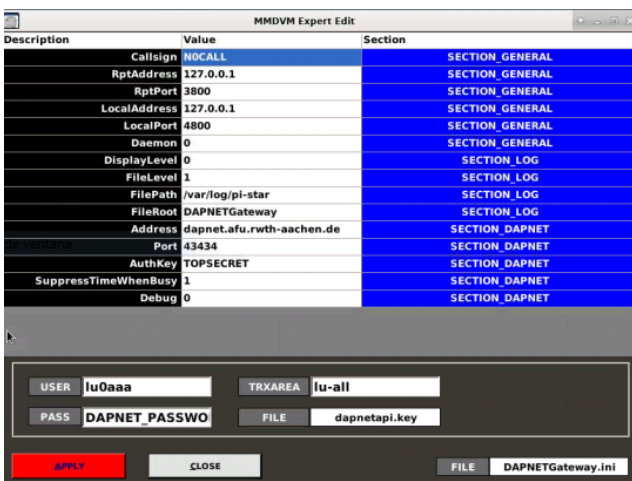
 DAPNETgtw EDIT

(**DAPNETgtw**) Here we can configure if we want the "Pager" type message sending service through DAPNET. To use the service you must first be registered. More information about DAPNET at https://dapnet.es
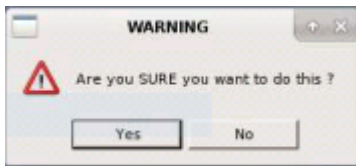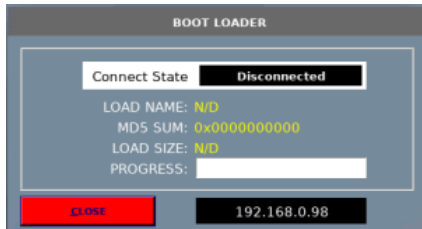
Panel 1 - General Menu

(**Power**): Turning our image on and off

(**RESTART**): Reboot of our image

(**FACTORY**) **ATTENTION!!!!** Selecting this menu option will restore all settings to factory settings (default values when burning our image to the SD card)

(**BOOT**): Button for updating files of our Image, for this process we activate this button and our image is waiting for the information to be sent, which is done from the program attached to the .ZIP of the image **arSpot_bootloader v1.0** where we will select the update files that the developer uploads and then transfer them to our image. Finished the image will restart
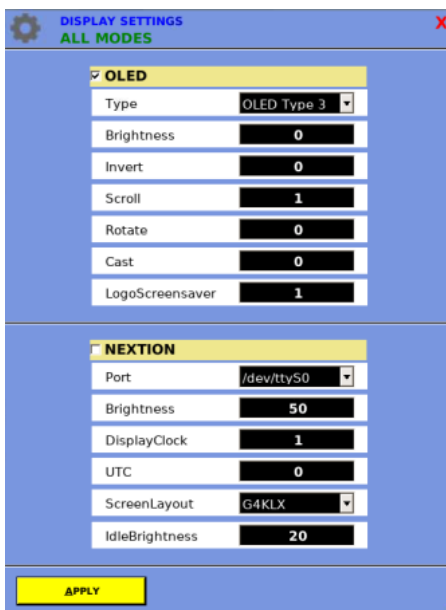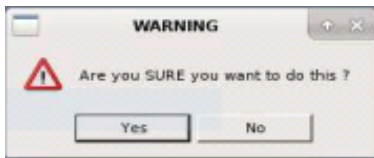

(**DISPLAY**) In this screen we can configure to have a screen placed in our MMDVM configurations of each of them OLED - NEXTION
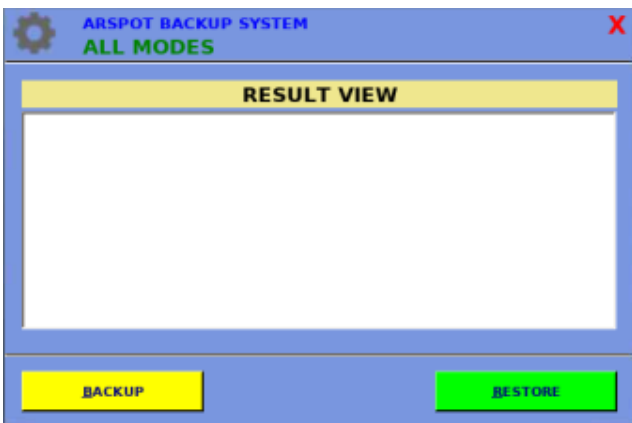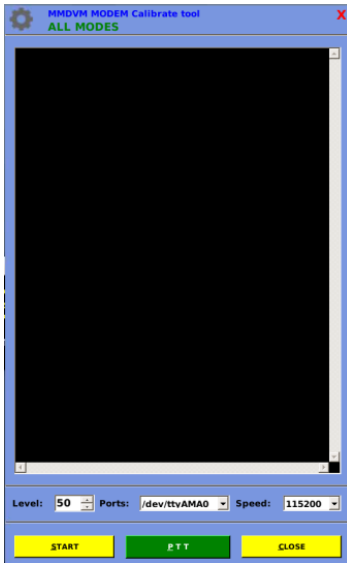

(**BACKUP**) With this button you can make a Backup of the image as well as restore any Backup that we have. It is always recommended to have a Backup of our image as updated as possible

(**HOSTS FILE**) We will use this option to update the HOST FILES files, (It is recommended to update them periodically).

(**CALIBRATE**) In this screen we will be able to verify and correct our "BER", activating the START button and using our space bar we will be able to see the VER values of our MMDVM, being able to adjust the TX LEVEL until reaching an acceptable level.

(BM Apikey) Using an API key allows you to keep your SelfCare username and password confidential and maintain granular control over each key you provide to others. The API key is not related to your SelfCare password at all. If you change your SelfCare password, the keys you have generated remain valid. At any time you can Revoke a key, and any person or application with this key will no longer be able to access the information and functions of your personal SelfCare account..

(WIFI): Button for the configuration of the WIFI network that we want to use.

(NETWORK): Button for the configuration of the Network Network that we want to use to connect our image

(REMOTE) Support remote commands via RF from MMDVM HOST

Panel 1 - General Menu – Main Config – EXPAND FS - SOFTWARE


(Main Config) Loading the data on this screen, what it does is replicate these in all the different menus where this information is required. Although all these data can be loaded individually on each screen of the different modes, with this option they are all automatically completed. It is recommended to load all the data mainly on this screen, and after specifying any particular data, modify it individually in each mode (STATION Menu)

Leave as a last resort and with the necessary experience the manual modification of the .INI Files

 (EXPAND FS) This function allows the file system to be expanded to the maximum available for the SD used
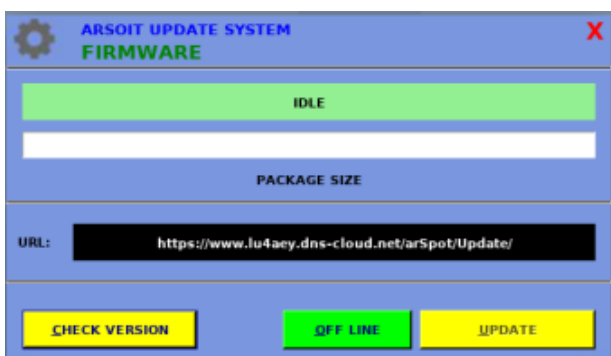

 (SOFTWARE UPDATE) This function is added since the latest version 1.5a allows to check if there are updates available for our image. It should also be noted that every time we restart our image, it performs a version check process, indicating that there is one in the upper left panel.
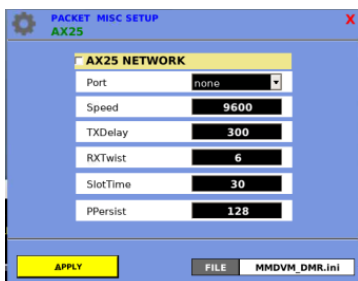
Also the update can be executed from the OFF LINE button previously downloading the file.

Panel 2 - General Menu – AX25 - WATCHDOG
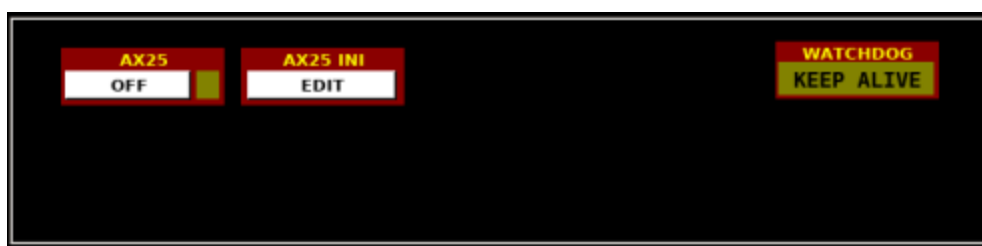
 (AX25) AX.25 is a data link layer protocol derived from the X.25 protocol designed for use by radio amateurs.

 It is mainly used for establishing connections and transferring data in frames between nodes and detecting errors introduced through the communications channel. It is almost exclusively used on VHF and UHF.

A simple mechanism using digipeaters is available at the datalink level. Digipeaters act as simple repeaters receiving, decoding and retransmitting packets from local stations. They allow multiple connections to be established between two stations unable to communicate directly.

(WATCHDOG): This tool is in charge of verifying the state of our MMDVM from time to time, it verifies that everything is working in optimal conditions, and if it detects any failure at the software level, it restores it. In addition, **it has an established link verification mode**, if it is down, it verifies and automatically reconnects without having to restart our MMDVM or the mode in which we are connected.

Temperature CPU	CPU Load	PWR state	Kernel Version	Disk State	CPU Platform	Panel Version
53.7°C / 128.6°F	14%	Normal	5.10.103-v7+	15G / 9G / 39%	Pi 3 Model B+ (1GB) - Sony, UK	v1.2.3a

Raspberry information panel: This panel indicates the data and status of our Raspberry as well as the current version of our AR-SPOT Image. Some of this data is sent by the APRS Client to be displayed in APRS.

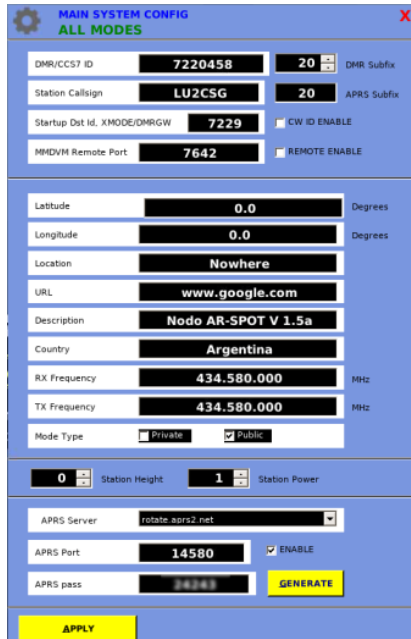**Finally, this is how we will see our image once configured and running in some way**

Next, a series of points to take into account at the time of configuration are detailed, as well as a small detail of the external programs that are attached with the .ZIP file

Currently the Image is constantly developing new functions and improvements. If you have any questions, comments or suggestions, do not hesitate to contact its developer at the following contact email lu4aey@gmail.com

Find all the Images and updates available in the following enlace

Important Points to Note

1- Cliente APRS

(1) It should be borne in mind that in the Menu (Main Config) for the Client to position us in APRS, in addition to the coordinates, we must have the option located at the bottom right (ENABLE) "checked", since by default it is distilled
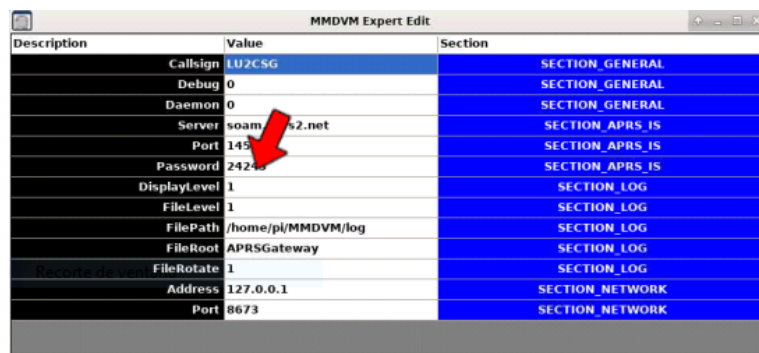
(2) Generate an APRS PASSCODE key in the following link https://apps.magicbug.co.uk/passcode/ Once the 5-digit key is generated, it must be configured in the APRSGateway – Password menu ***From Version 1.2 in the MAIN CONFIG button can be generated from there the PASSCODE**


2- YSF INACTIVITY TIMEOUT

In the menu (**STATION**) of the **YSF** configuration we find a box called **INACTIVITY TIMEOUT** which by default is set to 10 (Minutes), this means that if we are connected to a YSF Reflector and it has no activity during that time, it is automatically set it disconnects and does not reconnect unless we activate it again in YSF mode. So that this does not happen, we must set the value to **"0" (zero)** so that the reflector remains continuously connected. This option does not imply that the user changes the reflector (Room) from the X key or via DTMF, but rather limits the connection time when there is no activity.

Programs included in the .ZIP File

1- Wifi_Builder
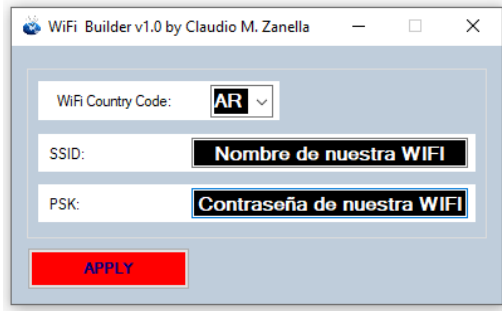
Completing the data of Wifi Country Code, SSID and PSK, we click on APPLY and it will generate the file **wpa_supplicant.conf** in the folder where we have downloaded the program, in which we must save in the BOOT of the SD card where we burn our IMAGE Ar-Spot. This process should only be done if we want to start our image connected via WIFI
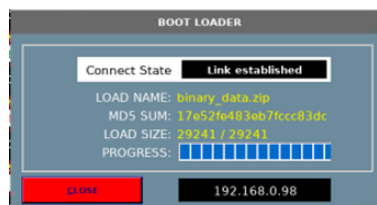
2- arSpot_bootloader – Programa de Actualización
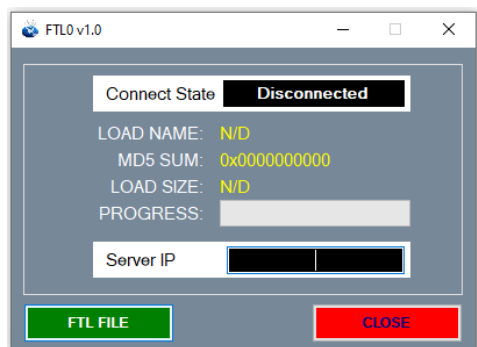
On a PC with a Windows environment and connected to the same network where we have our Ar-Spot image running, we run the program. With the image ready to receive the update (Button (BOOT) activated, we will write in the program the IP previously assigned by the Router and we will select the file with the update. Once the transfer of the files is finished, our image will restart to apply the changes .