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Building a Channel Plan Sencore SA1454 or SLM1456

The SA1454 or SLM1456 is shipped from the factory with a single channel plan (PLAN 6) programmed into the instrument. This plan includes all of the cable channels with a standard FCC or frequency assignment common among US cable systems. This plan identifies all channels as NTSC for the signal type and contains no digital channels.

Before going to the job site build one or more channel plans for your SA1454 or SLM1456. Building a channel plan configures the instrument to identify channels to be tested and identifies them as NTSC or digital so the proper analyzing tests are performed. Furthermore, it removes unused channels which do not require testing.

If you plan to do antenna installations or off-air TV-RF signal measurements build a channel plan based upon the transmitted channels in your area. Information can be obtained by visiting web sites such as <http://www.antennaweb.org>. Make a list of the off-air channels to be measured and note if they are (NSTC) or digital (8-VSB).

To measure signals on a cable system, build a cable channel plan based upon the cable channels. Prepare a list of the cable channels and identify the digital channels. A cable company technical representative can provide you with the digital channels and modulation type (QAM 64 or QAM 256). An alternative would be to use the Spectrum display to identify digital cable channels. Digital channels have a spectrum that looks like a flat top mountain. Please note that digital cable channel numbers are different than those presented by the cable digital set-top-box.

With the SA1454 or SLM1456 you can build six different channel plans identified as Plan 1 through Plan 6. These instruments build and manage channel plans using the same menus and process. Building a channel plan is done by entering into a SELECT FILE PLAN menu and secondly an EDIT CH. PLAN menu and making appropriate selections. This technical article shows you how to build a channel plan.

Building a Channel Plan – SELECT FILE PLAN menu

To build a new channel plan you must enter into the Channel Plan Menu by pressing and holding down the CHs PLAN button on the front of the instrument for 2-3 seconds. The menu is identified by a SELECT FILE PLAN heading at the top of the screen.

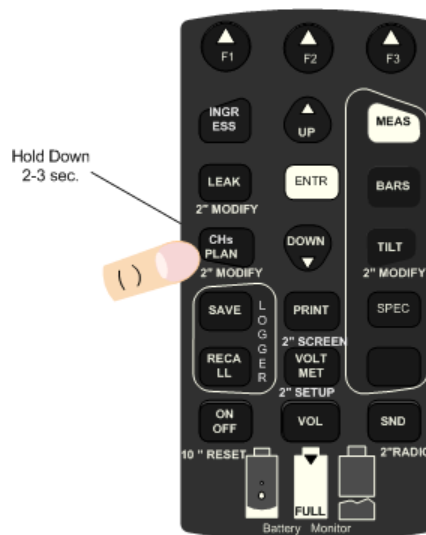


Figure 1. Hold down the CHs PLAN button for 2-3 seconds to enter the SELECT FILE PLAN menu.

The Select File Plan screen contains 4 or 5 selections that are required to start building your channel plan. These selections include:

1. Source
2. Destination (DESTINAT)
3. Select Mode (SEL. MODE)
4. Threshold Level (THRESH)
5. Confirm?

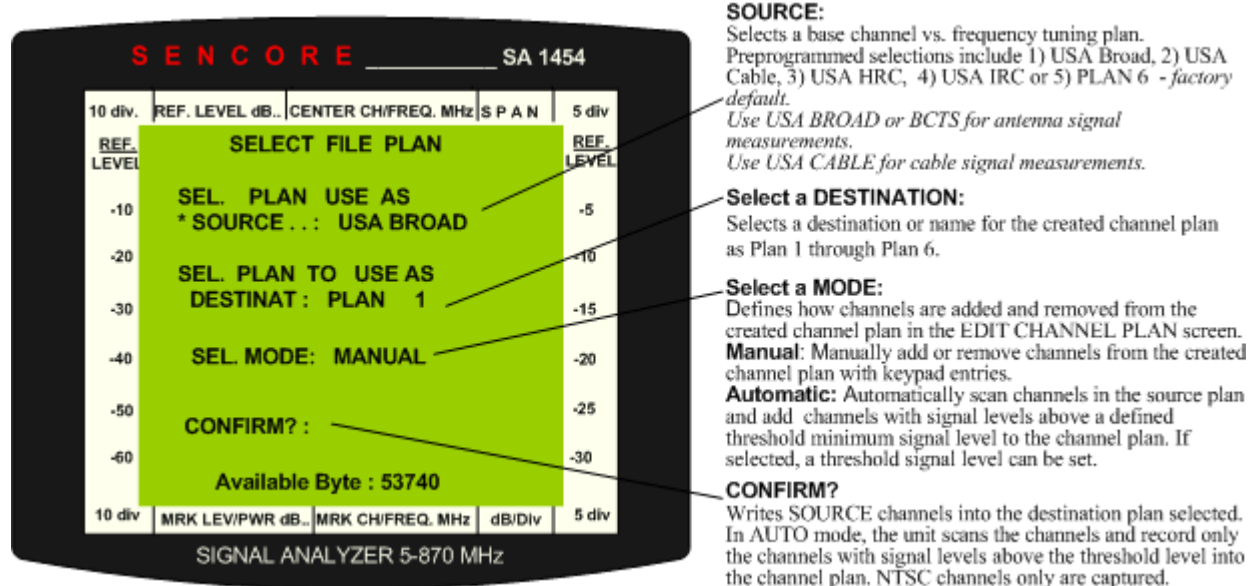


Figure 2. The Select File Plan menu is used to select a base channel plan (source) and to name the channel plan (destination).

1. Select Plan to Use As a Source

This selection defines the tuning plan (channel vs. frequency) used in the Channel Plan you are building. Selections include: 1) USA Broad, 2) USA Cable, 3) USA HRC, 4) USA IRC or 5) PLAN 6. *Note: These selections may be labeled differently as 1) BCTS, 2) EIA, 3) HRC EIA, 4) IRC EIA.* Choose "USA Broad" or "BCTS" to set up a channel plan for off-air antenna signal measurements. Choose "USA CABLE" or "EIA" for cable signal measurements. If the cable company uses channel frequency offsets known as HRC or IRC, use the corresponding selection.

Note: Channel plans built at an earlier time appear in the source menu as PLAN 1 through PLAN 6. You may select these as source plans to build a new channel plan or select them for channel editing.

2. Select Plan to Use As Destination

The destination selection defines the name of the new channel plan you are building as Plan 1 through Plan 6. *Note: Selecting PLAN 6 defines the destination for the channel plan you are building to replace the factory plan.*

3. Select Mode

The select mode SEL.MODE has two selections, manual or auto. This selection defines how channels are deleted from the channel plan in the next step or EDIT CHANNEL PLAN screen.

Manual: This selection requires that you manually add or remove channels from the channel plan

in the EDIT CHANNEL PLAN menu.

Auto: This selection permits the instrument to automatically tune through all the channels in the source plan and enter those channels in the channel plan that have signal levels above a defined threshold level.

4. Threshold (Auto select mode only)

This defines a minimum signal level strength during the automatic channel scanning process. Channels with signal levels above the threshold are retained while channels below the threshold level are omitted from the channel plan.

5. Confirm

Selecting CONFIRM accepts the entries you have made in the SELECT FILE PLAN menu writing the channels into the destination plan you have selected. If you selected the AUTO mode, the unit scans the channels and builds the channel plan.

Upon selecting CONFIRM, the instrument asks if you are sure. Pressing ENTER a second time writes over existing Plan 1 – Plan 6 selected as the destination. You are asked to WAIT as the instrument creates the new channel plan and writes it to memory. Once the scanning and writing to memory process is complete, an EDIT CH. PLANS menu is shown on the display.

To Build a Custom Channel Plan (SLM1456 or SA1454)

1. Choose a source tuning plan:

A. Press UP or DOWN pushbuttons. Position asterisk * by the SOURCE selection. Press ENTER. (*Asterisk becomes Arrow*)

B. Push the UP or DOWN arrow pushbutton to scroll through selections. (*Select USA BROAD or BCTS for off-air or antenna source plan. Select USA CABLE or EIA CABLE for standard cable signals*)

C. Press the ENTER pushbutton to accept the selection. (*Asterisk * moves to left*)

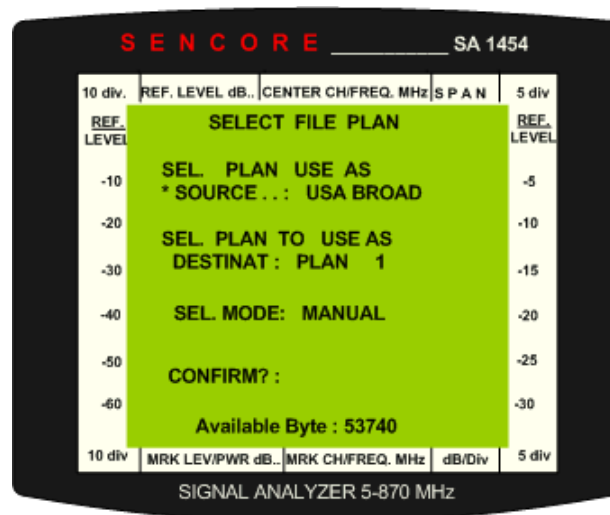


Figure 3. Press the up or down pushbuttons to choose a source tuning plan on the SA1454.

2. Choose the plan destination (Channel plan number or name):

A. Press the UP or DOWN pushbutton to position asterisk * by the DESTINAT selection. Press ENTER (*Asterisk becomes Arrow*)

C. Push the UP or DOWN arrow pushbutton to scroll through the selections. (*Select Plan 1 through Plan 6*)

C. Press the ENTER pushbutton to accept the selection. (*Asterisk * moves to left*)

3. Choose a SELECT MODE:

A. Press the UP or DOWN pushbutton to position asterisk * by the SEL. MODE selection. Press ENTER. (*Asterisk becomes Arrow*)

B. Push the UP or DOWN arrow pushbutton to select AUTO or MANUAL.

C. Press the ENTER pushbutton to accept the selection. (*Asterisk * moves to left*)

4. AUTO MODE ONLY: Choose a Threshold Level (THRESH)

A. Press the UP or DOWN pushbutton to position asterisk * by the THRESH selection. Press ENTER. (Asterisk becomes Arrow)

B. Push the UP or DOWN arrow pushbutton to select AUTO or MANUAL.

C. Press the ENTER pushbutton to accept the selection. (Asterisk * moves to left)

5. Confirm Selections

A. Press the UP or DOWN pushbutton to position asterisk * by the CONFIRM selection.

B. Press ENTER. Upon selecting CONFIRM, the instrument asks for a second verification.

Pressing ENTER a second time writes the selected plan to the new selected destination Plan 1-Plan 6. You are asked to WAIT. An EDIT CH. PLAN menu is displayed upon completion.

Editing Channels in a Channel Plan - The EDIT CH. PLANS MENU

The EDIT CH. PLANS MENU permits you to edit all the channels in the newly created channel plan. The most important function of this menu is to change channels from the default NTSC signal type to the proper digital signal type for measurement with the SA1454 or SLM1456. This menu displays the source plan, destination, channel number and channel parameters. Only the channel number, type and parameters may be edited.

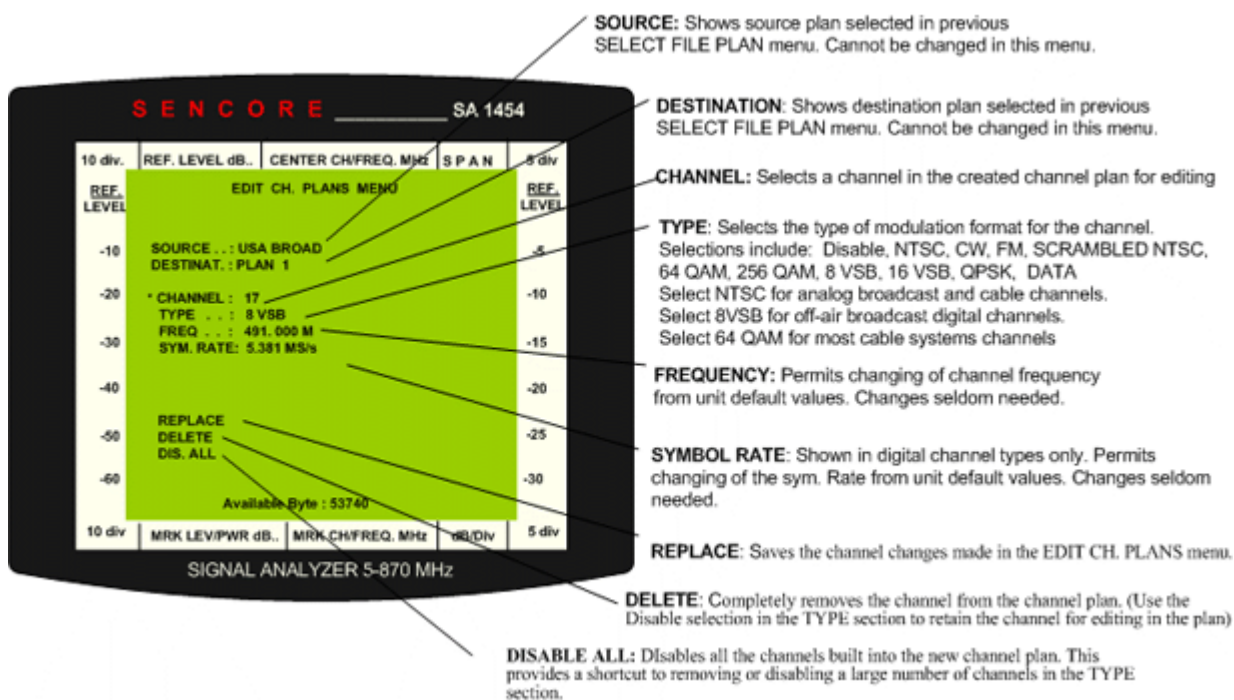


Figure 4. The Edit Ch. Plans menu is used to change channels from the default NTSC signal type to the proper digital signal type for measurement with the SA1454 or SLM1456.

Selecting Channels

To edit the channel information in the newly created channel plan, select each channel and make the desired changes.

Changing Signal Type

The TYPE selection is important in identifying the channel as an analog (NTSC) or Digital channel. The signal types are: Disable, NTSC, CW, FM, Scrambled NTSC, 64 QAM, 256 QAM, 8 VSB, 16 VSB, QPSK, and DATA. Use the NTSC setting for the traditional analog off-air broadcast and

cable signals. Use 8 VSB for digital broadcast channels. Use 64 QAM or 256 QUAM for digital cable channels. Note: Most cable systems use 64 QAM.

Changing Frequency

A frequency readout in the EDIT CH. PLANS MENU identifies the video carrier frequency of NTSC channels and the center frequency of digital channels. The frequency should be appropriate for the source channel plan as defined in the SELECT FILE PLAN menu. The frequency should not require a change for most applications.

Sym. Rate

A SYM. RATE line appears in the menu when a digital signal type is selected. This selection defines the symbol rate used in the transmission of the digital signal. The SA1454 and SLM1456 automatically choose and select the standard symbol rates used for the digital signal types that are selected. It is unlikely that changes would be needed to these default values.

Symbol Rate Defaults

Annex B

QAM 64 = 5.057 MSpS

QAM 256 = 5.361 MSpS

VSB

8-VSB = 5.381 MSpS

16-VSB = 5.381 MSpS

QPSK

1.280 MSpS

DATA

6.000 MSpS

Replace – Save Channel Changes

This function saves the channel changes you made in the EDIT CH. PLANS menu. After the desired changes are made for the channel, move the asterisk in front of REPLACE. Press the ENTER button to save the channel changes. **You must complete this step after every channel change or edits are not written to memory.**

Delete – Completely Remove Channel

The DELETE function at the bottom of the EDIT CH PLANS MENU completely removes the channel from the channel plan. **Do not use this function if you desire to resurrect this channel at a future time for inclusion in the plan. Once a channel is deleted with this function it cannot be recovered in the defined channel plan.**

Disable All

The DIS. ALL function at the bottom of the EDIT CH PLANS MENU disables all the channels built into the new channel plan. This provides a shortcut to removing or disabling a large number of channels when only a few are desired in the channel plan. For example, if you only desire 15 channels in a broadcast channel plan in your area for antenna work, start by selecting the DIS. ALL function. This disables all of the channels but retains them in the EDIT CH PLANS menu for editing. The TYPE selection for each channel indicates “DISABLE.” Select the individual channels that you desire in the plan and change the TYPE to NTSC (analog channels) or 8 VSB (digital channels). Remember to select REPLACE after modifying each channel and ENTER to replace the individual channel data.

To Edit Channels in the New Channel Plan

1. Select and Edit a Channel:

- A. Select a channel to edit. Push the UP or DOWN pushbutton to move asterisk * by the CHANNEL selection. Press ENTER. (Asterisk becomes arrow)
- B. Press UP or DOWN pushbuttons to select channel. Press ENTER
- C. Press UP or DOWN to increment channel number.

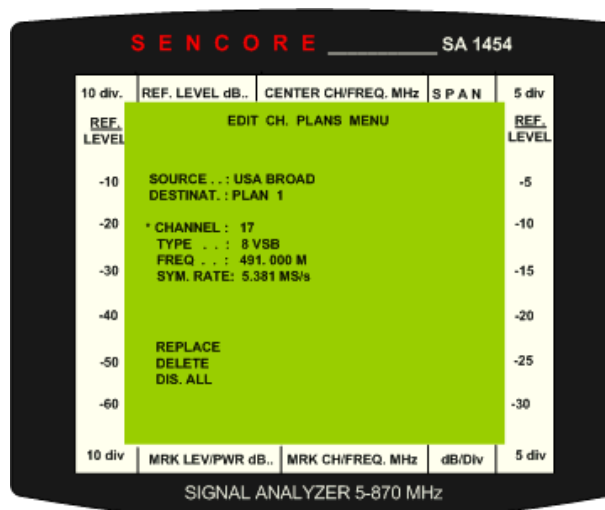


Figure 5. The voltage is applied directly to each plate of the LC cell in a passive matrix.

2. To Change Signal Type:

- A. Press UP or DOWN pushbuttons to move asterisk * by the TYPE selection. Press ENTER. (Asterisk becomes arrow)
 - B. Press the UP or DOWN pushbuttons to increment type selections. (Leave on NTSC for analog channels, Select DIASABLE to omit channels. Select 8 VSB for off-air antenna digital signals. Select Q64 for digital cable channels)
 - C Press ENTER to accept selection. (Asterisk moves to left)
- Frequency and Symbol Rate may also be changed or edited from default values using the same process. However instrument default values rarely require change.

3. Replace Channel Information:

- A. Press UP or DOWN pushbuttons to move asterisk * by the REPLACE selection. Press ENTER. Edited channel information is written to memory.

4. Continue to Edit Channels

- A. Select the next Channel to Edit and Continue steps 1-3.

5. To Exit the EDIT CH. PLANS Menu upon completion of editing.

- A. Press MEAS pushbutton to exit the EDIT CH. PLANs Menu.
You can return to further edit this channel plan by holding down the CHs PLAN pushbutton for 2-3 seconds and entering the channel plan number as the source and destination in the SELECT FILE PLAN menu.

Conclusion

For more information on Signal Level Technology, or information on how your business can grow with the Sencore signal level meters or signal analyzers, call your Sencore sales representative 1.800.736.2673 or outside of the U.S. 1.605.339.0100.