SDA 5500 Forward Sweep Setup Part 1

The following procedure is a installation on how to install an SDA 5500 into a headend with the proper levels for sweeping the network in the Guard band of SC-QAMs and the OFDM carriers for sweep.
NOTE: Some of these settings may be tighter than original installation specification do to this type of setup and to minimize possible corruption of carriers.
NOTE: It is possible that Sweep insertion points may cause pre and post errors due to sweep insertion into Guard Band

Prerequisite

System Requirements

SDA 5500 Firmware at least 3.2
ONX-630

Headend Installation Diagram

- Install SDA 5500
  - Test input level with ONX Channel Check
  - Verify QAM and OFDM levels with ONX are about 0 to 4 dBmV +/- 1 dB overall flatness

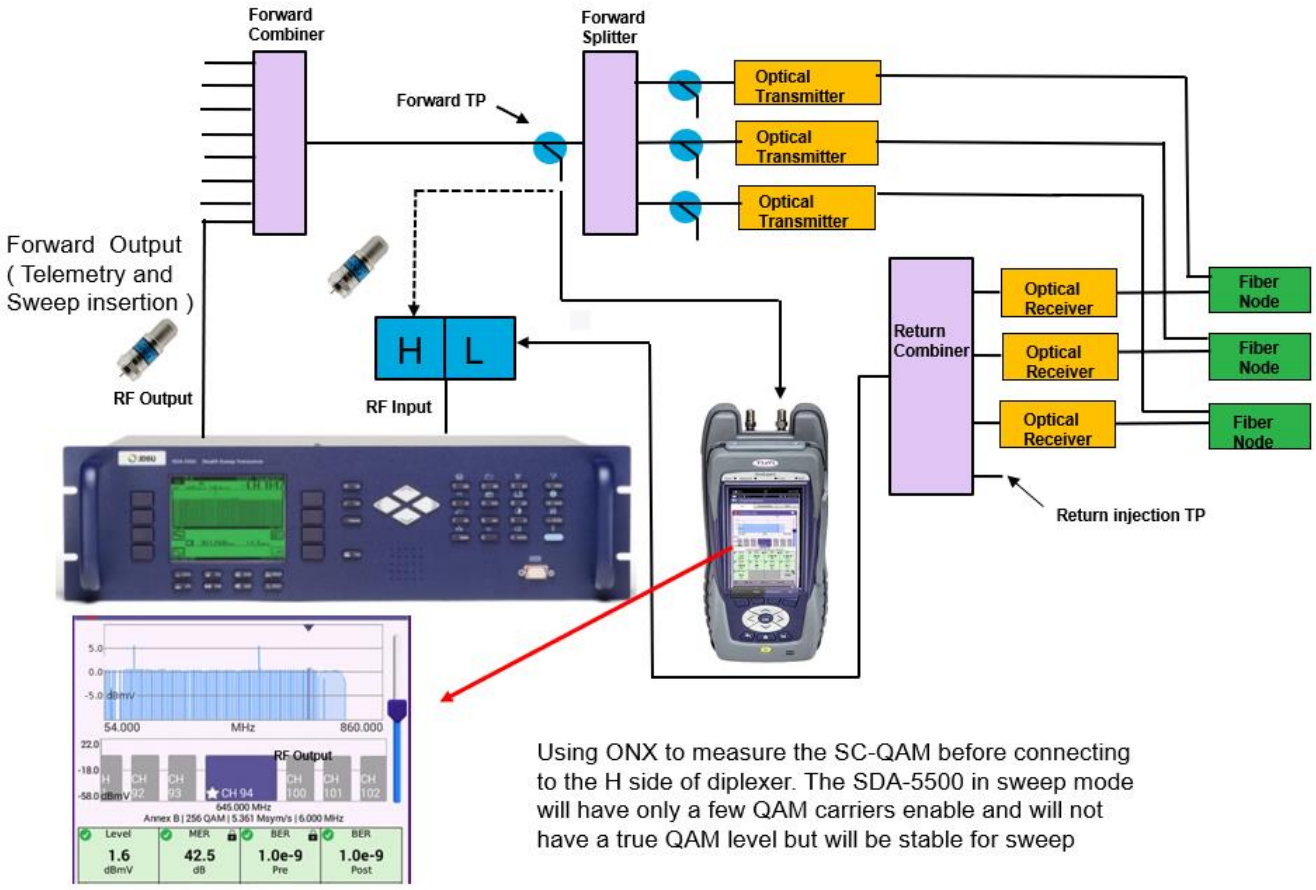


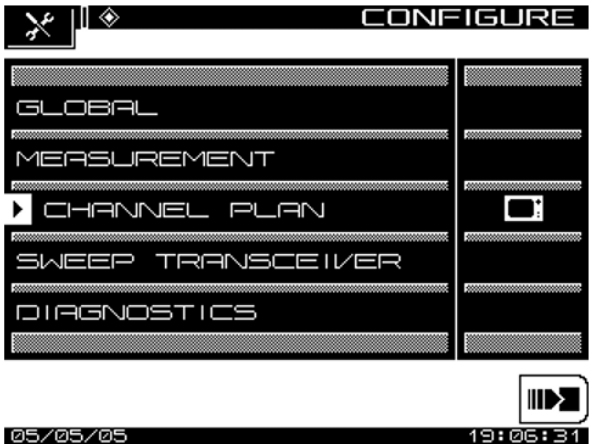
Figure 1: SDA 5500 Installation

Building a Channel Plan

Step 1: Get a copy of Channel plan.

Note: Channel 2 and OFDM and the Guard band frequencies to the highest SC-QAM.
Example: Ch2 57 MHZ, OFDM 672 to 756 MHz, Guard band in MHz 54, 60, 63, 66, 72……..
Your OFDM Carrier may be different
Note 2: Remove RF input to the SDA, (this is not typical but will speed up the process of getting sweep points into the SDA)

Step 2: Press Function Key then Configure “3” then enter on SDA 5500 then select Channel Plan



Step 3: Build Channel Plan

Step 4: Enter a name for Channel plan.
Use the keypad on front of meter

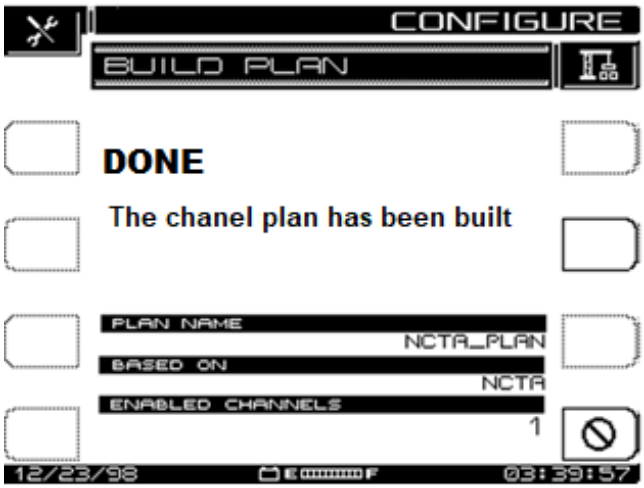
Step 5: Use the base plan NCTA.

Note: the input of SDA should be disconnected at this time. This is a guide to get sweep points into it.

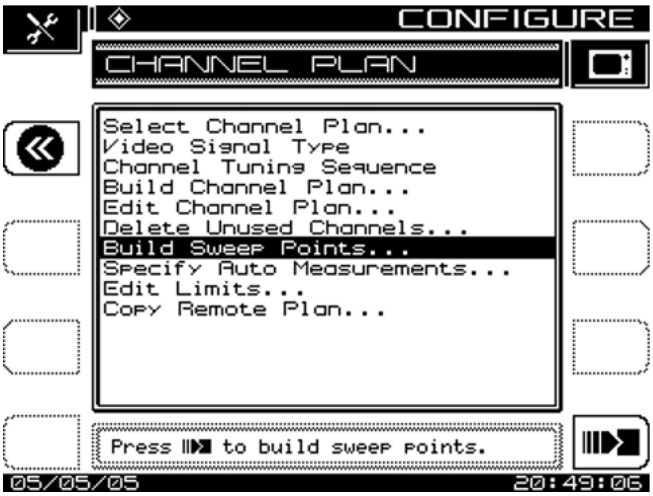
Step 6: Use the frequency that best frequency for your system. Typical 860 MHZ

Step 7: The unit is building the plan.

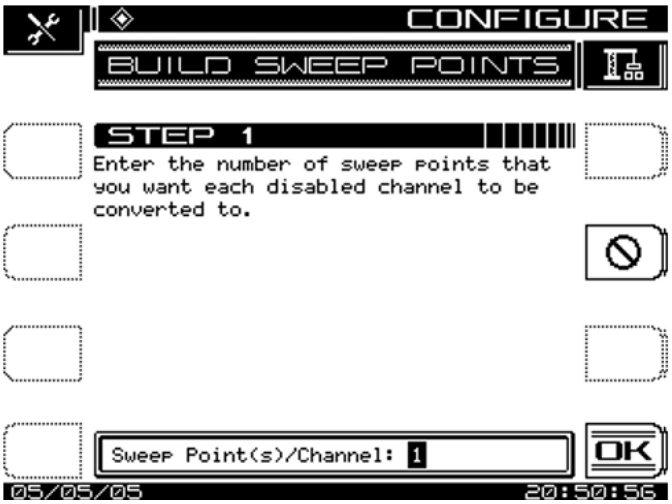
Step 8: The Channel plan has been built.



Step 9: Build sweep Points
Note: the points will be built at the typical Analog channel. You will need to change the frequency to the Guard band in step 15



Step 10: Build 1 sweep point per channel
This step just builds point where there were no channels found



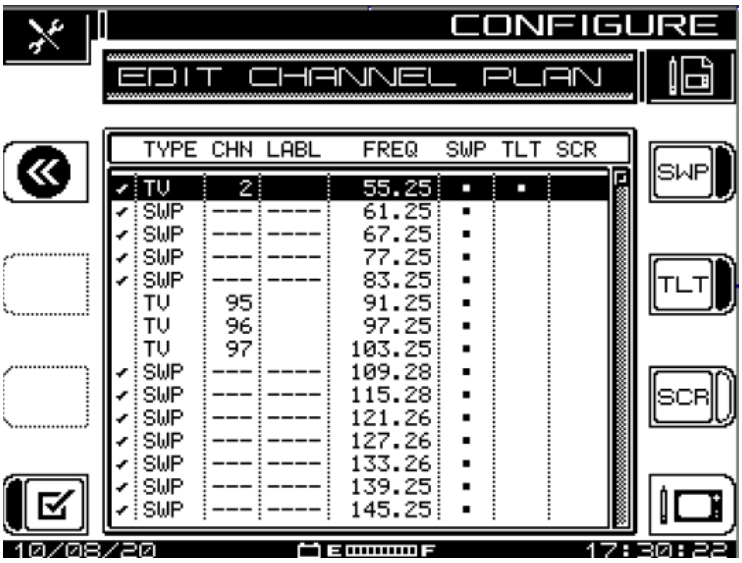
Step 11: Turns no active carriers into sweep injections.

Step 12: Build 1 sweep point per channel
This step just builds point where there were no channels found

Step 13: Editing the channel plan

Step 14: Edit TV carriers CHN 2

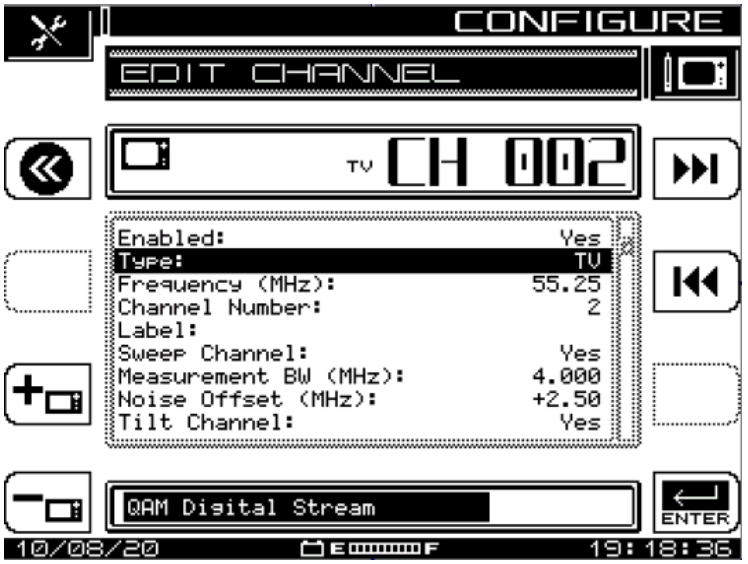
Press



Step 15A: This step is to change TV Carrier to QAM digital Stream.

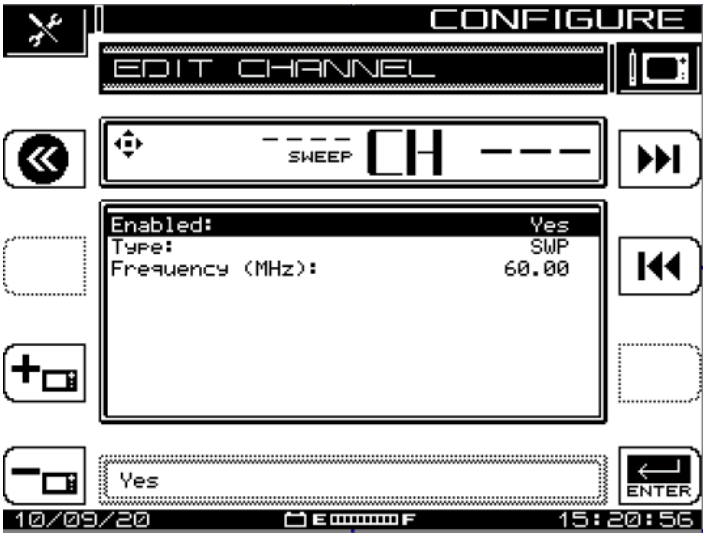
You must also do this for your OFDM carrier Every 6 MHz. Example: 96 OFDM will be measured 17 points (Note: Do not add sweep points under the OFDM carrier!)

You will also edit the SWP channel to reflect the guard band frequencies



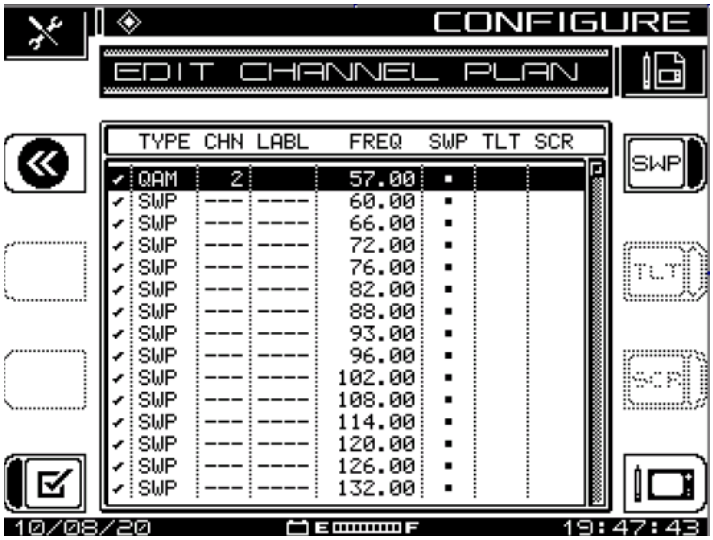
Step 15B: Edit QAM carrier and OFDM in 6 MHz increments

Step 15C: *You will change the frequency to the guard band*

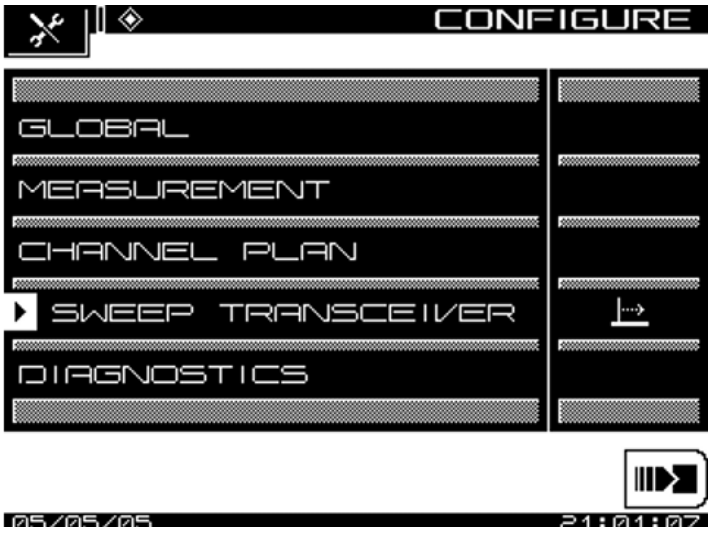


Step 16: After editing this what your Channel plan should look like for a typical NCTA channel plan

Note: Sweep point carriers at 197.87 must be deleted. This will cause problems and cannot be set to 198.00



Step 17: Telemetry setup in from the Configure Screen



Step 18: Set Sweep Mode to Transmit SDA Compatible)

Step 19: Set Telemetry frequency

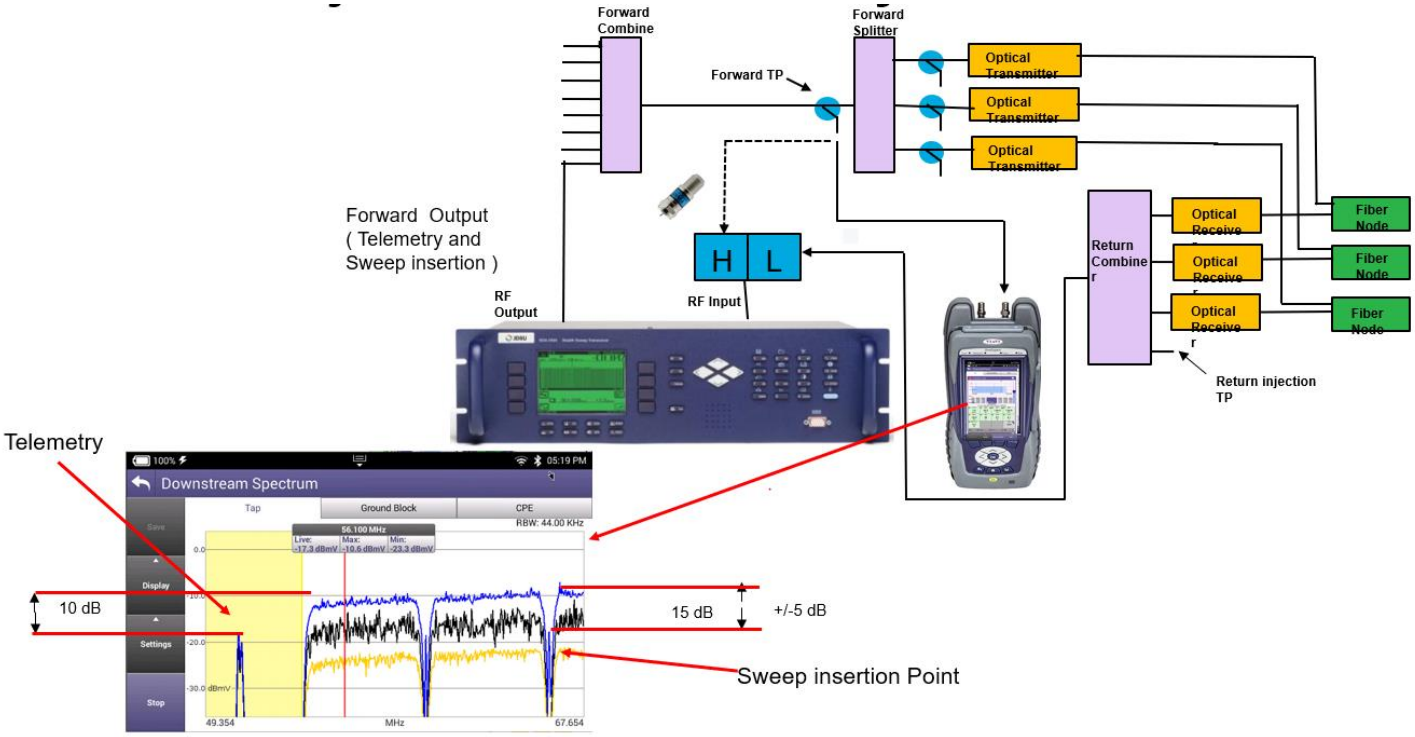
Step 20: Set Forward telemetry to the lowest setting of 20.
Note: Start low to insure you are not injecting to high
See step 23

Step 21: Set Forward sweep insertion to the lowest setting of 20.

Step 22: Set include audio carriers to no

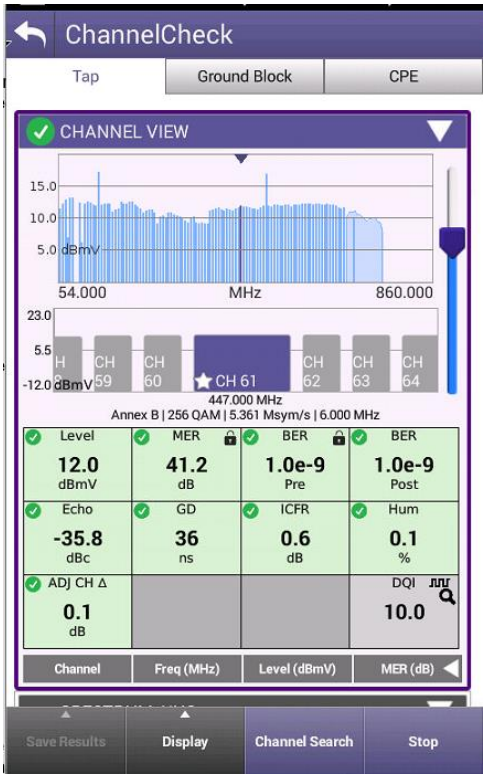
Step 23: Press the sweep key and verify the telemetry and sweep levels are >10 dB, below the QAM carrier in the Spectrum. RBW 44 khz
You may need to make this closer to 15 dB to compensate for the transmitter flatness

Note: Sweep point carrier at 197.87 must be deleted. This will cause problems and cannot be set to 198.00



See Addendum to set up Spectrum

Step 24: Use Channel check to verify no BER errors and DQI level less than 10

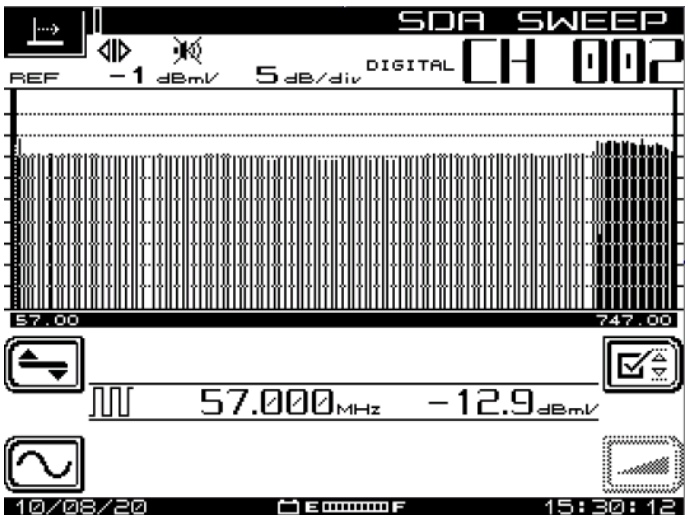


Note :
If BER errors occur, then lower the sweep insertion levels. Attenuate externally if needed.

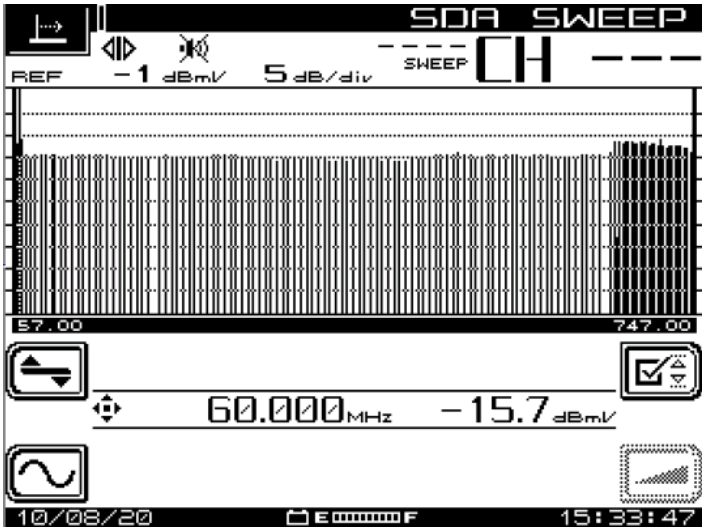
Review step 16 to insure the correct Guard band frequencies

Step 24:. Disconnect from ONX and then connect to High side of diplexer.

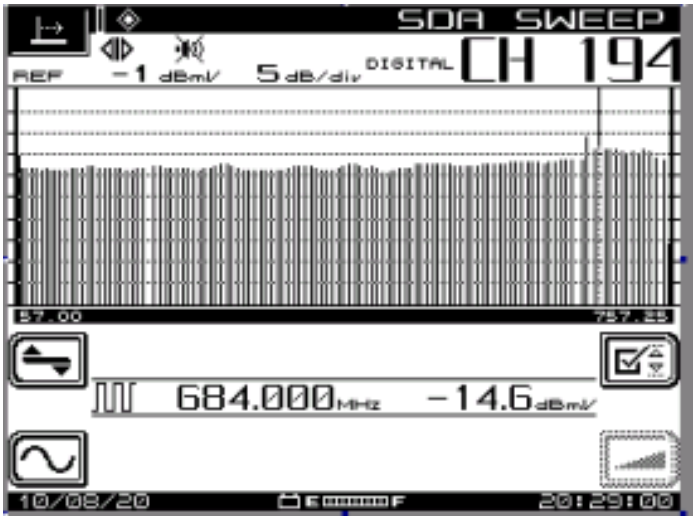
The level of Channel 2 is not accurate in the sweep mode. Special algorithm is used to ensure accuracy**. Should be stable**



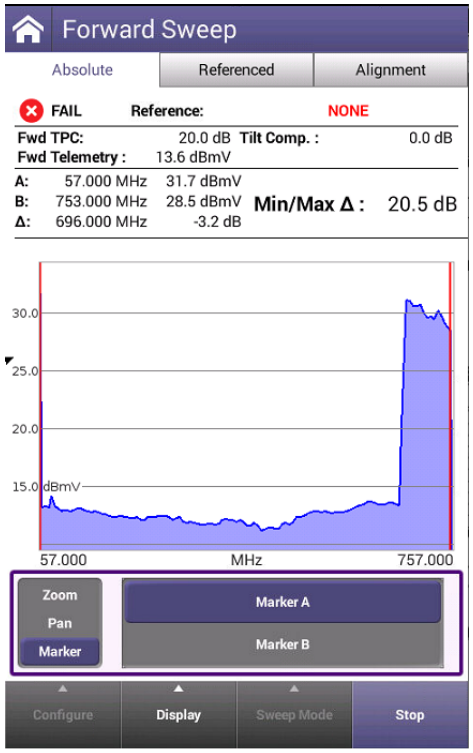
Step 25: The level of the Sweep insertion is accurate. **Should be stable**

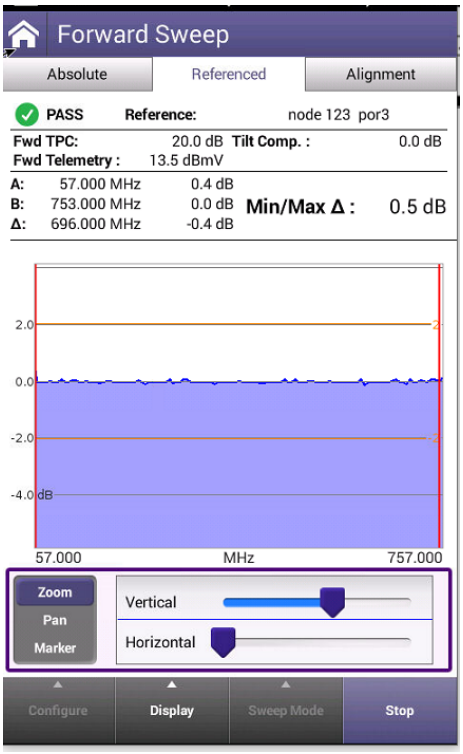


Step 26: Note the level of OFDM carriers in your plan. They may read inaccurate in the sweep mode due to the algorithm for level stability. **Should be stable**



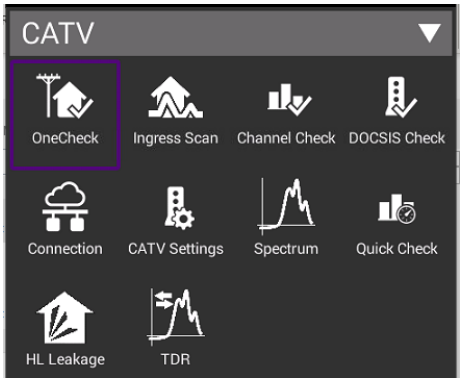
Step 27: Forward Absolute and Referenced Sweep Max Min on Referenced sweep < .8 typical



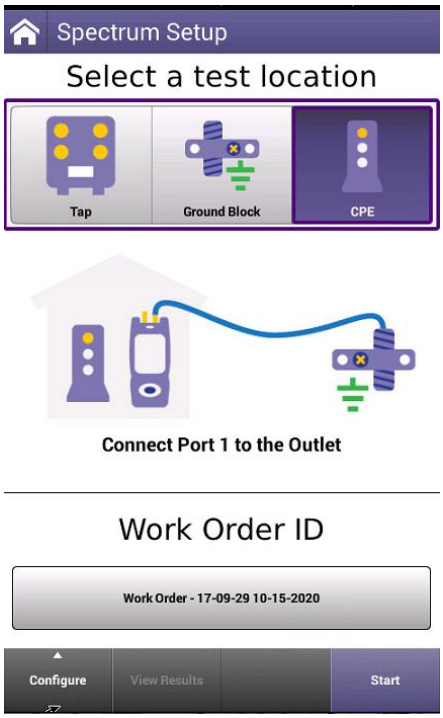


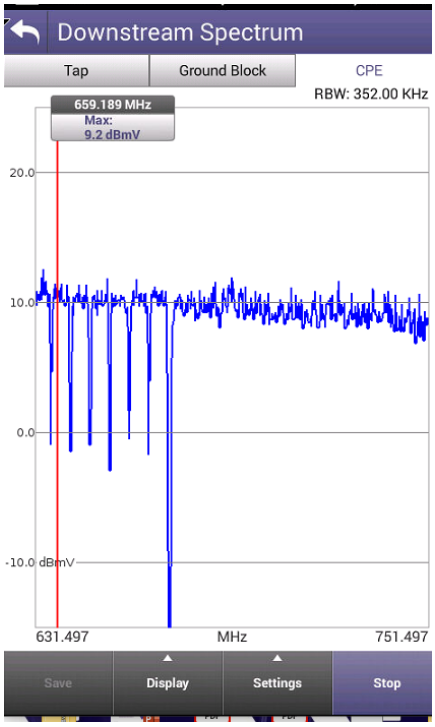
Addendum
Setting the ONX Spectrum for capturing sweep pulses at 44 kHz resolution

Step 1: Select spectrum from CATV Tab

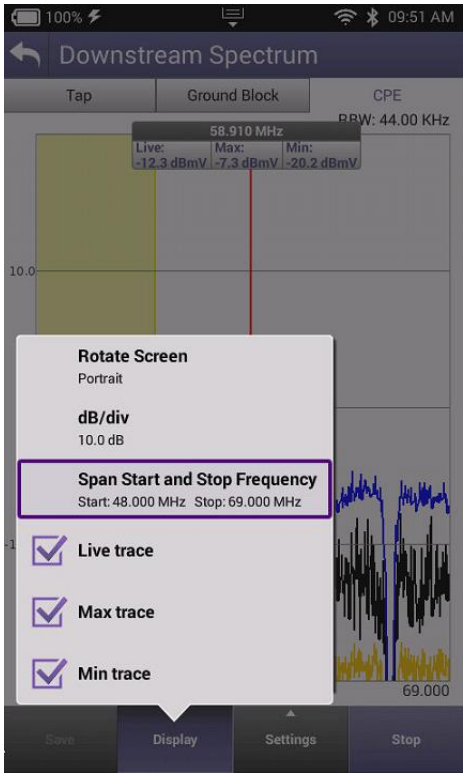


Step 2: Select the start key then the display key

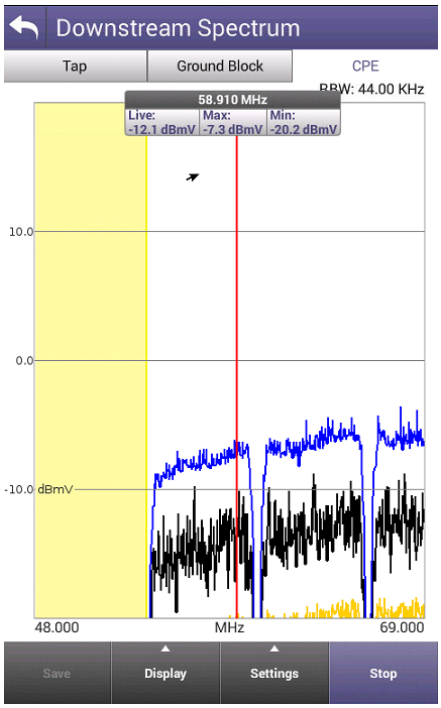


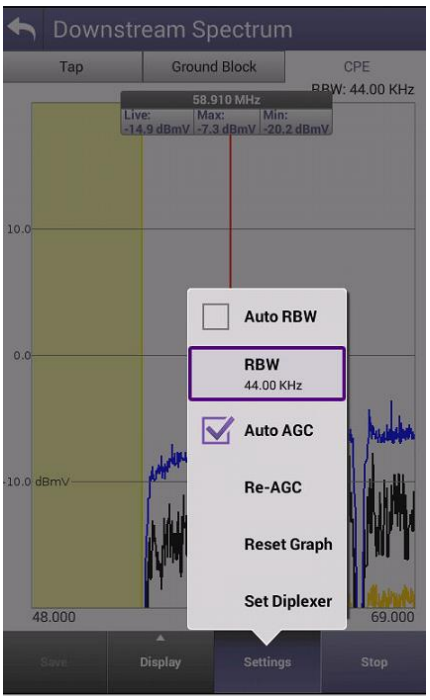


Step 3: Set dB/div to 10 dB
Check Live trace Max trace and Min trace
Set Start and stop frequencies to 48 and 69 MHz

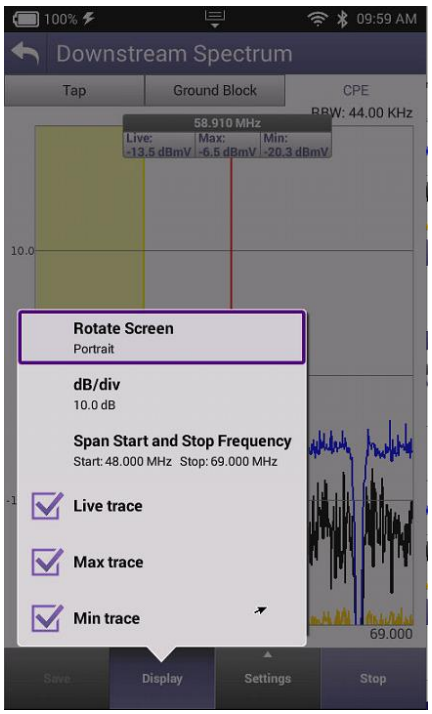


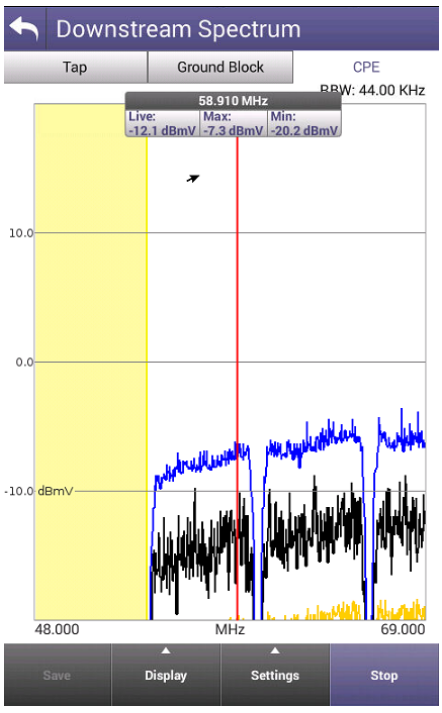
Step 4: Press the setting key to set the 44 kHz resolution



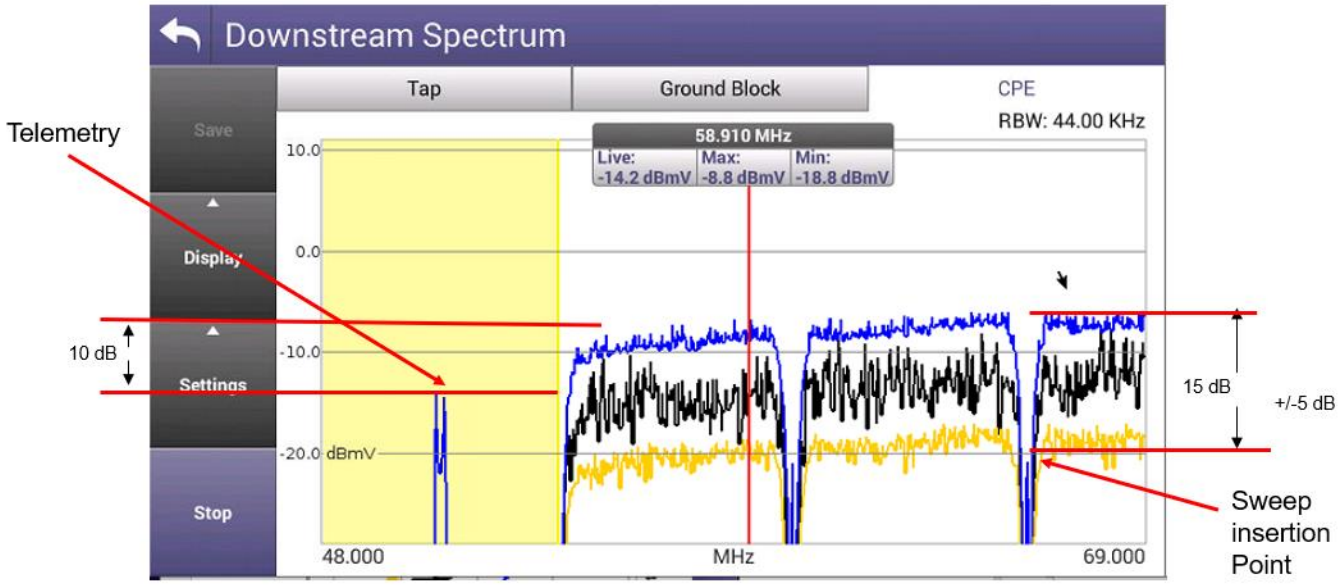


Step 5: Press Setting key to change to Portrait





Step 6; Verify sweep insertion levels



Note: If Sweep trace is too noisy after reference > 1 dB P/V then raise the sweep insertion level according.