

Quick Card

SCU-1800 Forward Channel Plan (Sweep insertion and OFDM)

The following procedures will show how to program the SCU-1800 using only sweep insertion points in the guard band of QAM carriers and adding OFDM carrier in a typical CATV system

NOTE: It is possible that Sweep insertion points may cause pre and post errors due to sweep insertion into Guard Band.

Always verify in Channel Check for BER errors

Prerequisite

Please Review SCU-1800 Getting Started Guide

System Requirements

SCU-1800
48V DC supply
10/100 BaseT Ethernet connection with static IP
ONX-620/630

SCU-1800 Sweep Settings

- **Set the Forward Telemetry Frequency**
 - Choose an area of the forward spectrum not occupied.
 - Typical placement is at 51 MHz, 52 MHz, 74.2 MHz, 90MHz
 - Must be **1 MHz** from any other carrier.
- **Set the Forward Telemetry Level**
 - Set the level the same as QAM level in spectrum analyzer
 - Verify Level at head end forward TP or Fiber node TP
 - Set Sweep insertion level 10 to 13 dB below QAM level. (this should insure no interference to the adjacent QAM carrier)
 - See Figure 1,2 and 3

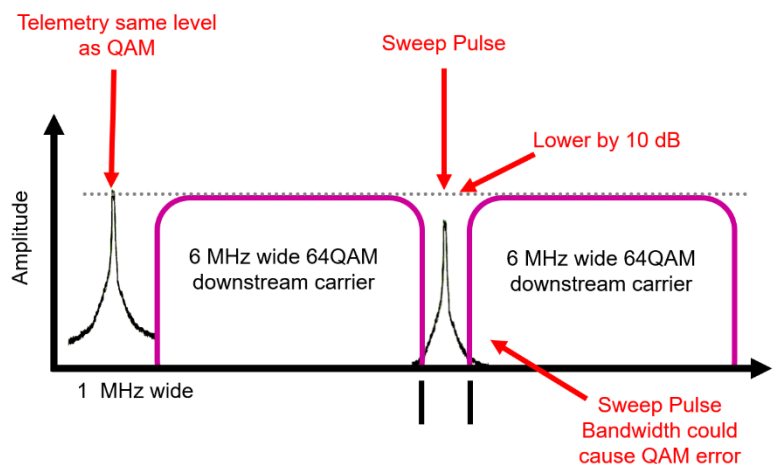


Figure 1: Telemetry and sweep point

Sweep Settings

Forward Telemetry Frequency (MHz) 51

Forward Telemetry Level (dBmV) 40

Forward Sweep Level (dBmV) 30

Reverse Telemetry Frequency (MHz) 12

Rapid Reverse Sweep Capable ☐

Automatically start sweep at power on ☒

Note: Forward Sweep Level is 10 dB lower than Telemetry

Submit Query

Figure 2: Sweep Settings

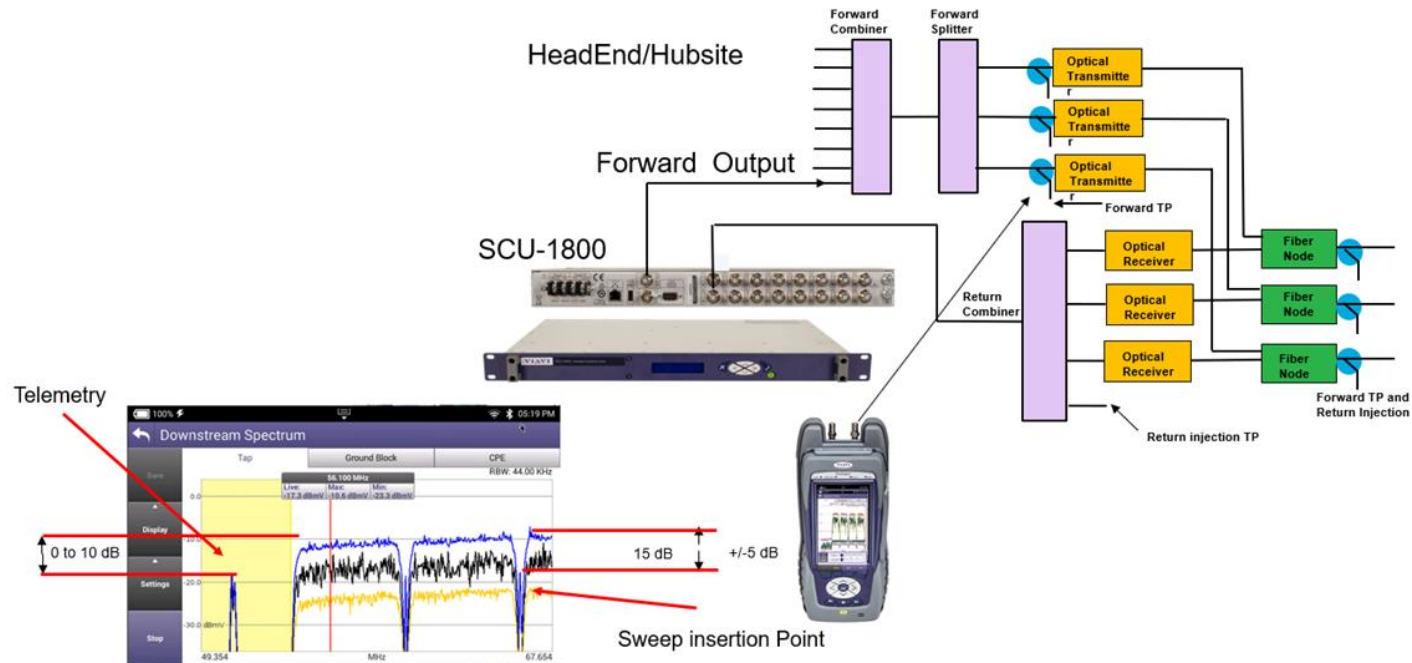
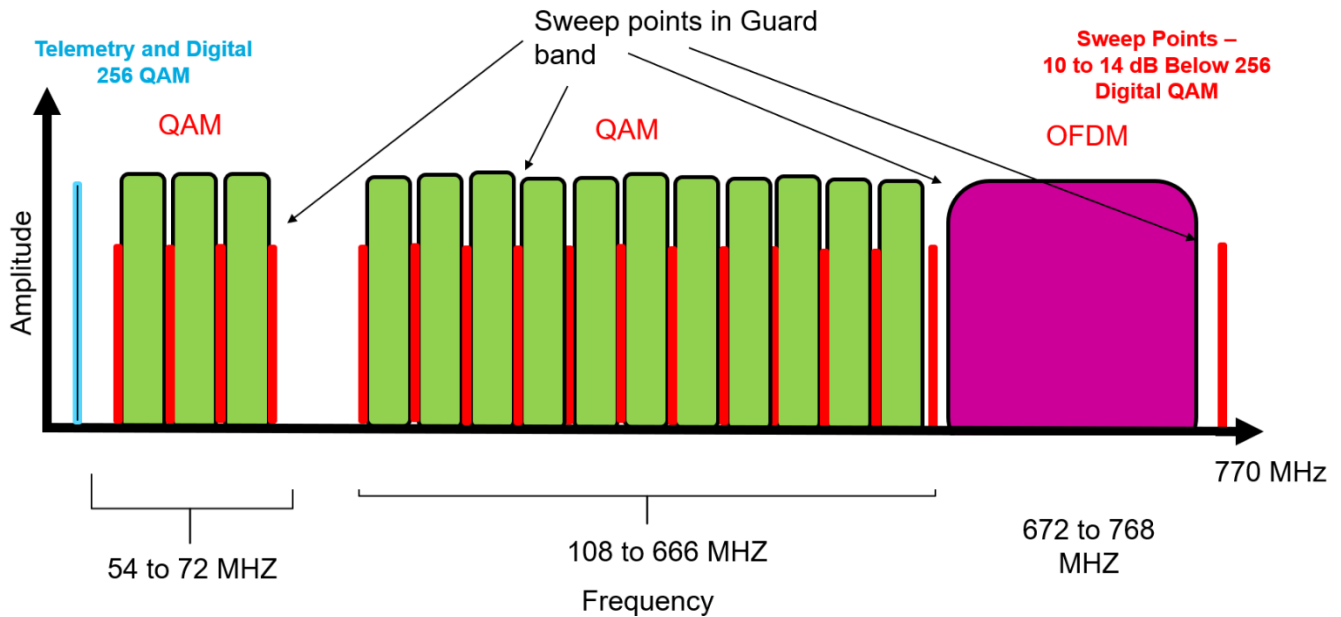


Figure 3: Forward Telemetry Placement and Level test point

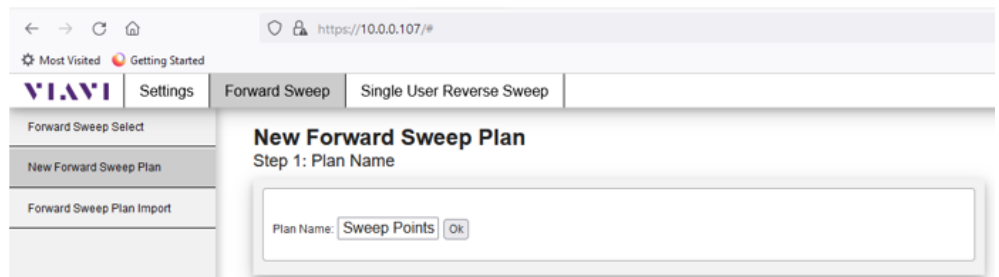
- **SCU-1800 Example Channel Plan**

- The graphic below will show a typical channel plan with three different areas to build sweep points



Step 1: Plan name

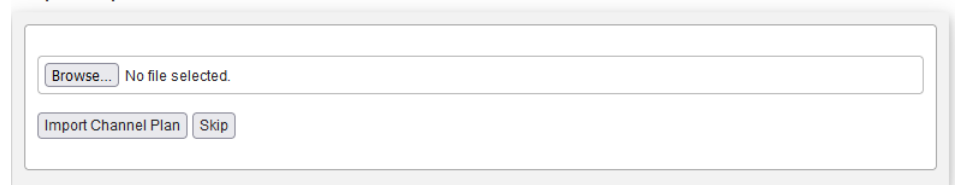
Enter plan name then OK



Step 2 Skip this step

New Forward Sweep Plan

Step 2: Import Channel Plan



Step 3

Set start and stop frequencies.

- 54 to 72 6 mhz
Press add Points

-108 to 666 mhz
Press add Points

Skip over OFDM carrier'

- Add aa single Sweep injection at 770

Press the back button

Note: if using OFDM as sweep reference then set start frequency and band width and level to 6 dBmV


May need to delete 138 and 612 for leakage tag

Start and Stop

Add single carrier

New Forward Sweep Plan
Step 3: Add any additional sweep points.

Plan Name:

Press the back button 

Sweep Points List

Type	Frequency (MHz)	Span (MHz)	Level (dBmV)	Info
Sweep Point	54.000		30	
Sweep Point	60.000		30	
Sweep Point	66.000		30	
Sweep Point	72.000		30	

Point Count: 4 Delete Selection

☒ Use level from channel plan build

Define Active Carriers in system which will be used as sweep points
Note: These carriers are not generated by the SCU but will be measured by the field instrument

Add Individual Active Channels to be used as sweep points
Note: These are active carriers that are to be used as measured sweep points by the field instrument but were not included in the channel plan import.

Channel Type: Center Frequency (MHz): Channel Bandwidth: Level (dBmV):

Add Channel

Define carriers to be injected by the SCU-1800
Note: These are pulsed sweep points generated by the SCU-1800 in uncoupled spectrum

Add Multiple Sweep Injection Points
Note: This function inserts a sweep point at the start frequency given and will inject a sweep point every XX MHz defined by the Sweep Carrier Spacing up to and including the Stop Frequency if the Stop Frequency lands on the spacing boundary. This function utilizes a 500kHz guard band spacing and will only insert sweep points where there is at least 500kHz available from any previously defined carrier or sweep point.

Valid Frequency Range: 42 - 1218 MHz Valid Carrier Spacing Range: 1 - 8 MHz

Start Frequency (MHz): Stop Frequency (MHz): Sweep Carrier Spacing (MHz): 6 MHz in the Guard band

Add Points

Add Individual Sweep Injection Points
Note: These are pulsed sweep points injected by the SCU-1800. Recommended to have 500kHz available spacing for each point.

Center Frequency (MHz):

Add Point

Figure 7: Adding Sweep insertion points

• Activate Sweep Plan

- Select Sweep Plan and activate
- Click Green tab to start sweep
- Click Red tab to stop sweep

Verify check Mark that you plan is activated

Highlight the Plan then activate it

Forward Sweep Plan Selector

Search:

Active	Name	Sweep Points	Channels
<input checked="" type="checkbox"/>	he Sweep Points	113	0

New Copy Edit Delete Import Export Activate Forward Plan

Figure 8: Activate Sweep Plan

Note: When the sweep plan is running the forward telemetry can be **verified** in the forward spectrum in live max trace.

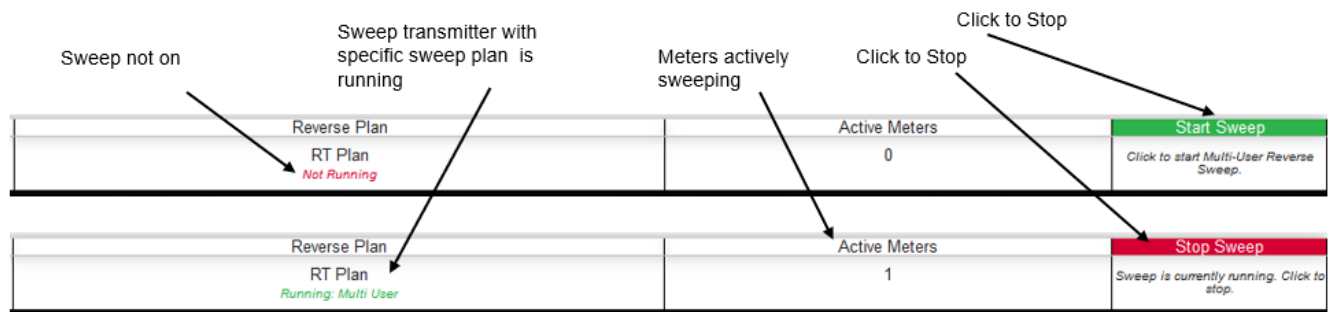
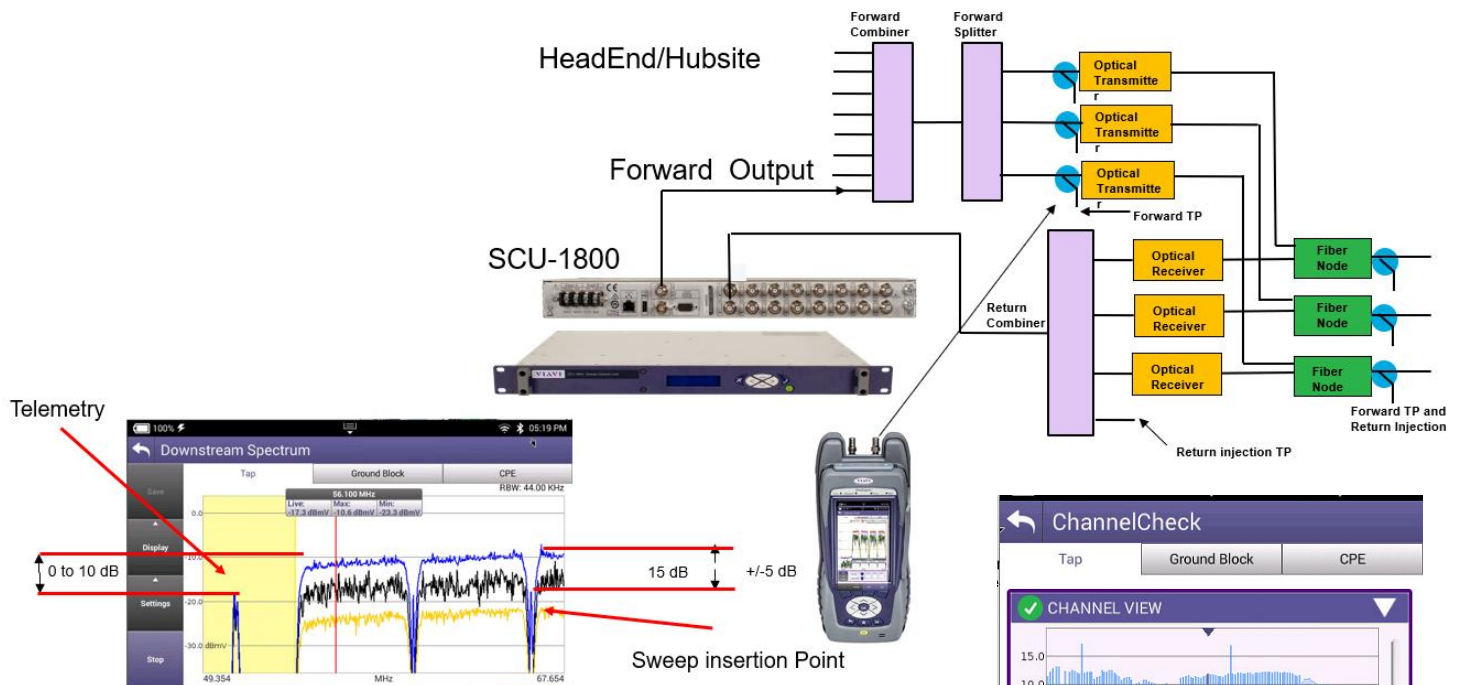


Figure 9: Start Sweep levels

- Testing the forward Sweep
 - Using the test point in the headend and setting the configure on the meter verify Telemetry and sweep level



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 3 to insure the correct Guard band frequencies

- Testing the forward Sweep
 - Using the test point in the headend and setting the configure on the meter test the forward sweep with ONX

Successful Sweep

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

Figure 10: Sweep Configure
12: Successful Forward sweep!

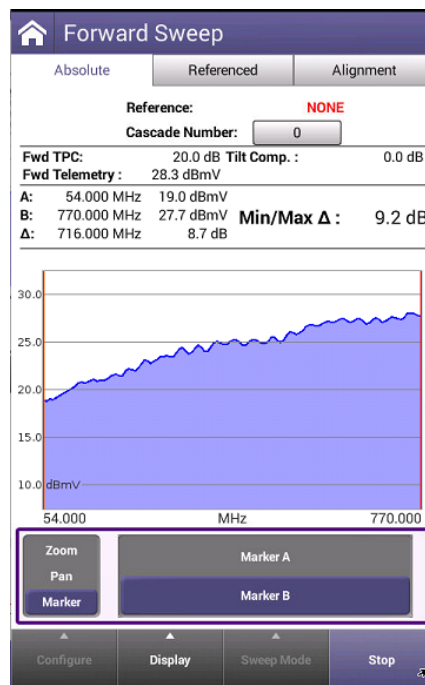
Addendum

Use Channel check to verify less than 10

Note :

If BER errors occur, then levels. Attenuate externally if

Review step 3 to insure the frequencies



Screen

Figure

no BER errors and DQI level

lower the sweep insertion needed.

correct Guard band

- **SCU-1800 Example Channel Plan with OFDM**

- The graphic below will show a typical channel plan with three different areas to build sweep points and OFDM
- Use you ONX in Channel Check to get OFDM frequency and BW see graphic 11.

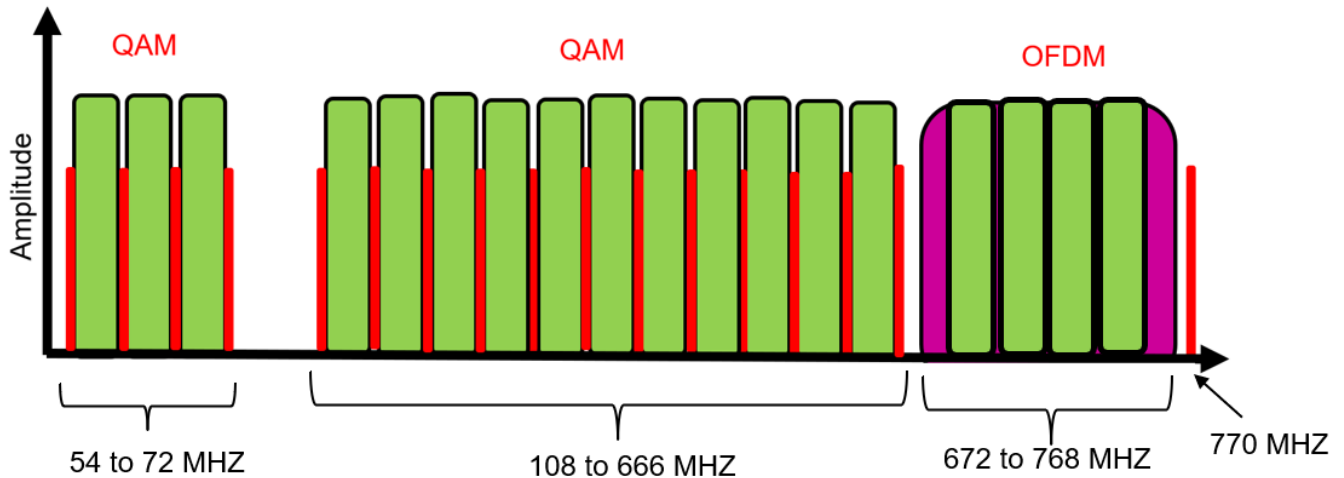
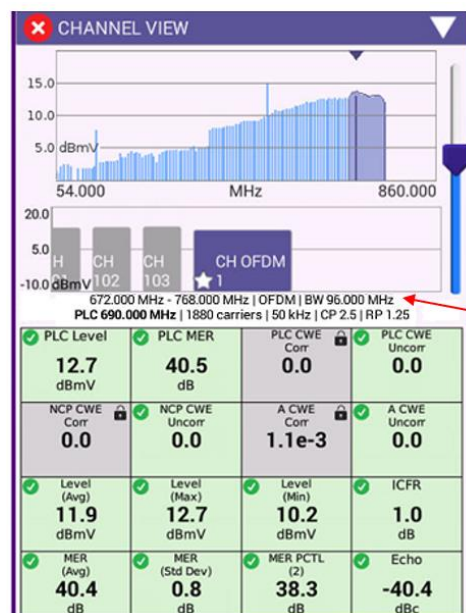


Figure 10: typical sweep points with OFDM



Note the
Frequency and OFDM
BW

Figure 11: OFDM Frequency and BW

Define Active Carriers in a system which will be used as sweep points

- #1 Select channel type OFDM
- #2 Select start frequency (see figure 11)
- #3 Select channel BW (see figure 11)
- #4 Select Channel Level 6db is default (this was a default level that was used for input to SDA)
- #5 Press the Add Channel button

Define Active Carriers in system which will be used as sweep points

Note: These carriers are not generated by the SCU but will be measured by the field instrument

Add Individual Active Channels to be used as sweep points

Note: These are active carriers that are to be used as measured sweep points by the field instrument but were not included in the channel plan import.

Channel Type

Start Frequency (MHz)

Channel Bandwidth

Level (dBmV)

OFDM

672

96 MHz

6

Add Channel

Figure 12: Adding Sweep points of OFDM

Forward Sweep Edit

Plan Name: test

Back

Sweep Points List

Search:

Type	Frequency (MHz)	Span (MHz)	Level (dBmV)	Info
Channel	675.000	6	6.00	OFDM 675.00MHz
Channel	681.000	6	6.00	OFDM 681.00MHz
Channel	687.000	6	6.00	OFDM 687.00MHz
Channel	693.000	6	6.00	OFDM 693.00MHz
Channel	699.000	6	6.00	OFDM 699.00MHz
Channel	705.000	6	6.00	OFDM 705.00MHz
Channel	711.000	6	6.00	OFDM 711.00MHz
Channel	717.000	6	6.00	OFDM 717.00MHz
Channel	723.000	6	6.00	OFDM 723.00MHz

Point Count: 16

Use level from channel plan build

Delete Selection

Define Active Carriers in system which will be used as sweep points

Note: These carriers are not generated by the SCU but will be measured by the field instrument

Add Individual Active Channels to be used as sweep points

Note: These are active carriers that are to be used as measured sweep points by the field instrument but were not included in the channel plan import.

Channel Type

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OFDM

672

96 MHz

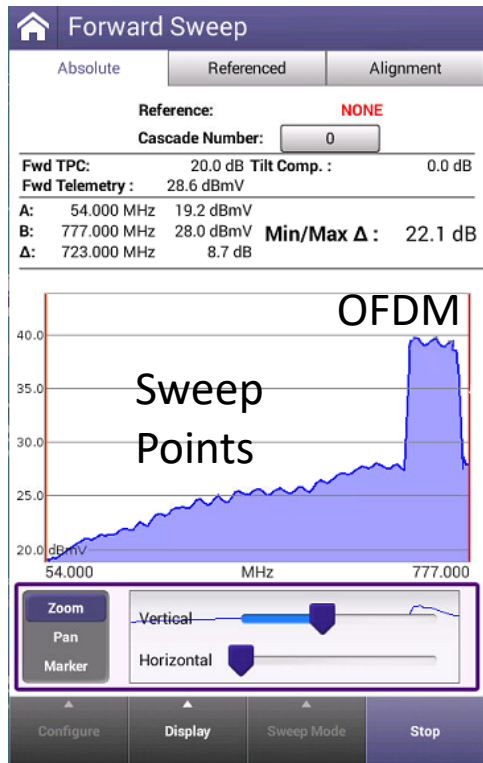
6

Add Channel

Figure 12: Adding Sweep Points of OFDM

ONX sweep at the node with sweep points and OFDM

Absolute Sweep



Referenced Sweep

