

SWP-BOX Sweep Transmitter

Extended Sweep

The VeEX SWP-BOX is a portable, battery operated field Sweep Transmitter that connects directly to the Node or Amplifier. It works in conjunction with the CX380C field test set to do an Extended Forward Sweep or a Full Plant Forward Sweep.

SWP-BOX Functions

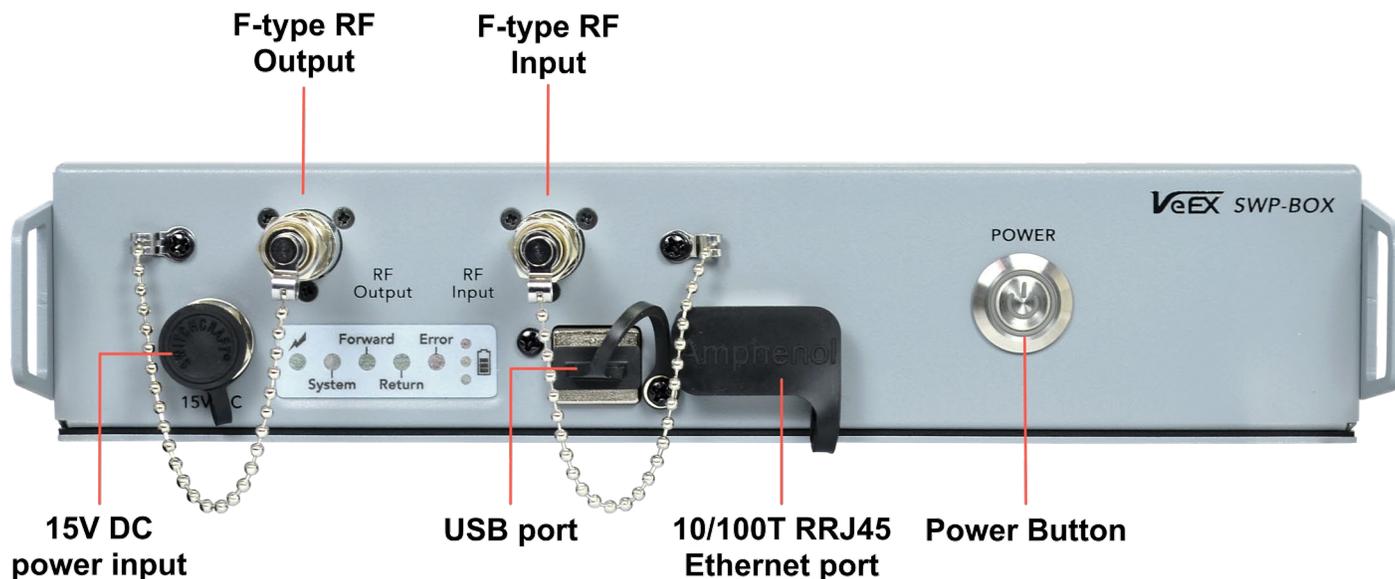


Figure 1: Transmitter Functions

Process Overview

- Using the CX380C Extended Sweep feature, build a Forward Sweep Profile based on a full channel scan from the Node or Amplifier output.
When the Extended Sweep mode is selected, a Sweep Profile is based on the Last Channel scanned and sweeps the upper extended spectrum.
When the Full Plant Sweep mode is selected, a Sweep Profile and Guardband Table is created from a Discover Channel scan and sweeps the entire spectrum.
- Transfer the Forward Sweep Profile from the CX380C to the SWP-BOX via an Ethernet connection. Once received, the SWP-BOX will begin transmitting.
- Connect the SWP-BOX to the distribution plant and start the Sweep.
- Save Sweep results to a file by connecting the SWP-BOX to the CX380C and pressing the CX380C **Save**  button.
- Upload the saved file to the R-Server to view Test Results.

Extended Spectrum HFC Plant Preparation

Based on the Sweep response, the following made need to be replaced for quality control:

- Amplifier Modules/Housings (*Actives*)
- Tap Faceplates /Housings (*Passives*)
- Splitters, Power Inserters and Directional Couplers/Housings (*Passives*)
- Main Line Cables or Connectors (*Actives*)

Build a Sweep Profile on CX380C

1. Using the CX380C field meter, from the **Main Menu** press **More > More > Extended Sweep**.
2. Set the **Configure Profile** to **Yes**, then set the **Type of Sweep** to **Extended** for extended spectrum or **Full Plant** for entire spectrum.
3. Set the desired **Stop Frequency** for the Sweep, then enter the **Test Point Loss** of the connection point of the Node or Amplifier.
4. Connect the CX380C meter to the test point of the Node or Amplifier and press **Build**. The CX380C scans and analyzes channels to get the current Channel Power and Last Channel Frequency to build the Sweep Profile.
5. Press **Save As** on the keypad to name the profile.

Extended Sweep - above Last Channel (see Figures 2 and 4)

Start Frequency: set to be 5 MHz above the last channel scanned

Stop Frequency: previously entered on the main **Extended Sweep** screen

Forward Communication Frequency: set to 20 MHz above the last channel scanned

Full Plant Sweep - entire Spectrum (see Figures 3 and 5)

Start Sweep Frequency: set to be 5 MHz below the first channel discovered

Stop Sweep: previously entered on the main **Extended Sweep** screen

Forward Sweep Communications Frequency: above the last channel discovered

Sweep Transmit Level: first channel discovered

Sweep Transmit Slope: Channel Level Tilt between the first and last channel discovered



Figure 2: CX380C Extended Sweep Profile Setup



Figure 3: CX380C Full Plant Sweep Profile Setup

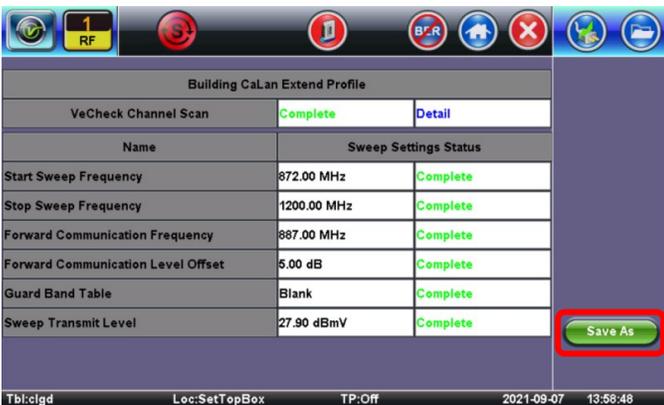


Figure 4: CX380C Extended Sweep Profile Complete



Figure 5: CX380C Full Plant Sweep Profile Complete

Transfer Sweep Profile to SWP-BOX

1. Power **ON** the SWP-BOX.
2. Connect an Ethernet cable between the Management port of the CX380C to the Ethernet port on the SWP-BOX.
3. In **CaLan Extended Profile**, select the name of the profile to transfer.
4. On the CX380C **Extended Sweep** screen, press **Transfer**.
5. When the transfer is complete, the SWP-BOX will configure the transmitter and begin transmitting.

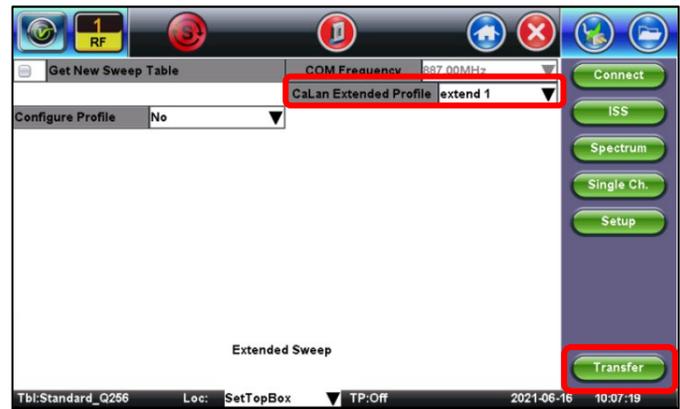


Figure 6: Transfer Profile to SWP-BOX

Injecting Sweep

Connect the SWP-BOX to the RF Plant and start the Sweep. The following two methods are described for injecting sweep:

Method 1: Use existing Passive devices connected to the Node or Amplifier.

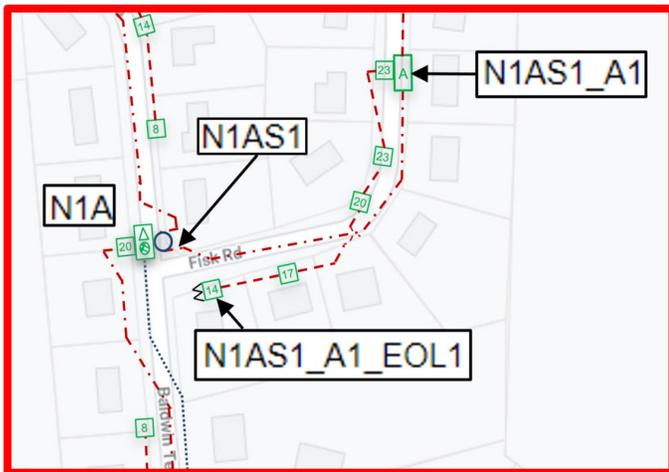


Figure 7: SWP-BOX connected to Passive device at Node/Amplifier

1. Use a 20 dB down, Power Blocking RF Test Probe to connect the SWP-BOX to the input connection seizure screw of an existing Passive device, which is connected to the Node or Amplifier.
2. Connect another Test Probe to the passive device output seizure screw connection. Connect the CX380C RF input to the Test Probe and start the Extended Sweep process.



When measuring with a Test Probe (-20dB) on one port and injecting the Sweep on the same port with same Test Probe (-20dB), set the Test Point Loss to the sum of both losses ($20 + 20 = 40\text{dB}$).

Method 2: Cut in a DC-16 backwards to use as a combiner at the Node or Amplifiers Output connection.

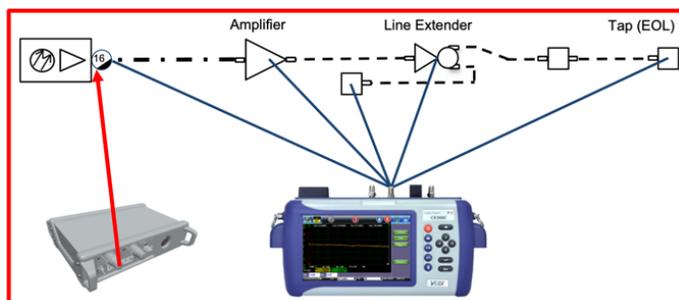


Figure 8: SWP-BOX with DC-16 combiner

1. If there is no existing passive device on the RF output of the Node or Amplifier, a DC-16 could be inserted as a combiner for the SWP-BOX sweep transmitter.
2. Add a "Housing to F" adapter to the "Tap" side of the DC-16, this will be used for the SWP-BOX sweep insertion point.
3. Use a 20 dB down, Power Blocking RF Test Probe to connect to the DC-16 "Input" seizure screw connection. Connect the CX380C RF Input to the Test Probe and start the Extended Sweep process.



When measuring with a Test Probe (-20dB) on one port and injecting the Sweep on a different port (-16dB) set the Test Point Loss to the sum of both ports ($16 + 20 = 36\text{dB}$).

Save Results

1. Connect an Ethernet cable between the Management port of the CX380C to the Ethernet port on the SWP-BOX.
2. On the CX380X **Extended Sweep** screen, press **Connect**.



If this is the first time saving results, select the **Get New Sweep Table** checkbox.

3. Press **Save**  on the CX380C keypad, then type the name of the device and press **Apply**.
4. On the **Save result as** screen, type the **Current NODE ID** and any other information as needed, then press **Apply**.



Using the **Current NODE ID** groups all Test Results when uploaded to the R-Server to improve sorting.

Upload Results to R-Server

1. Upload all the results to **VeEX R-Server**.
2. In R-Server, go to **> Results & Report > Results | Results View**, the **Test Results** page.
3. In the bottom **Search By** bar, select the Node ID and enter the name of the Node and date to search.
4. Click **Search**. All test results associated with that Node ID are displayed.



Name	Result Type	Size	Date Uploaded	Date Measured
N1AS1	CX380 Spectrum	566B	6/11/2021 7:59:55 AM	6/11/2021 10:20:37 AM
N1AS1	Catan Forward Sweep	32.82KB	6/11/2021 7:59:49 AM	6/11/2021 10:22:43 AM
N1AS1_A1	CX380 Spectrum	566B	6/11/2021 7:59:52 AM	6/11/2021 10:23:58 AM
N1AS1_A1	Catan Forward Sweep	33.69KB	6/11/2021 7:59:48 AM	6/11/2021 10:27:10 AM
N1AS1_A1_E0L1	CX380 Spectrum	566B	6/11/2021 7:59:53 AM	6/11/2021 10:29:32 AM
N1AS1_A1_E0L1	Catan Forward Sweep	32.82KB	6/11/2021 7:59:47 AM	6/11/2021 10:32:47 AM
N1AS1_A1_LE1	CX380 Spectrum	567B	6/11/2021 7:59:57 AM	6/11/2021 10:35:10 AM
N1AS1_A1_LE1	Catan Forward Sweep	33.00KB	6/11/2021 7:59:52 AM	6/11/2021 10:36:59 AM
N1AS1_A1_LE1_E0L2	CX380 Spectrum	567B	6/11/2021 7:59:54 AM	6/11/2021 10:38:54 AM
N1AS1_A1_LE1_E0L1	CX380 Spectrum	567B	6/11/2021 7:59:57 AM	6/11/2021 10:43:01 AM
N1AS1_A1_LE1_E0L1	Catan Forward Sweep	32.83KB	6/11/2021 7:59:51 AM	6/11/2021 10:45:01 AM
N1AS1_A1_LE1_E0L2	Catan Forward Sweep	33.37KB	6/11/2021 7:59:48 AM	6/11/2021 10:47:12 AM
N1AS1_A1_LE2	CX380 Spectrum	566B	6/11/2021 7:59:54 AM	6/11/2021 10:50:39 AM
N1AS1_A1_LE2	Catan Forward Sweep	33.04KB	6/11/2021 7:59:48 AM	6/11/2021 10:51:24 AM
N1AS1_A1_LE2_E0L1	CX380 Spectrum	567B	6/11/2021 7:59:56 AM	6/11/2021 10:52:35 AM
N1AS1_A1_LE2_E0L1	Catan Forward Sweep	33.59KB	6/11/2021 7:59:50 AM	6/11/2021 10:53:38 AM

Figure 9: R-Server Sweep Test Results

About VeEX

VeEX Inc., a customer-oriented communications test and measurement company, develops innovative test and monitoring solutions for next generation telecommunication networks and services. With a blend of advanced technologies and vast technical expertise, VeEX products address all stages of network deployment, maintenance, field service turn-up, and integrate service verification features across copper, fiber optics, CATV/DOCSIS, mobile 4G/5G backhaul and fronthaul, next generation transport network, Fibre Channel, carrier & metro Ethernet technologies, WLAN, and synchronization.

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