SDA 5500 Part 2 Reverse Sweep Setup

The following procedure is a continuation of the SDA 5500 installation. The document will show you the steps to properly set the reverse channel plan and proper level for reverse sweeping the network.

NOTE: Some of these settings may be tighter than original installation specification due 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
Review SDA 5500 Forward Sweep Setup Part 1 version 1.2

SDA 5500 Forward and Return Installation Diagram

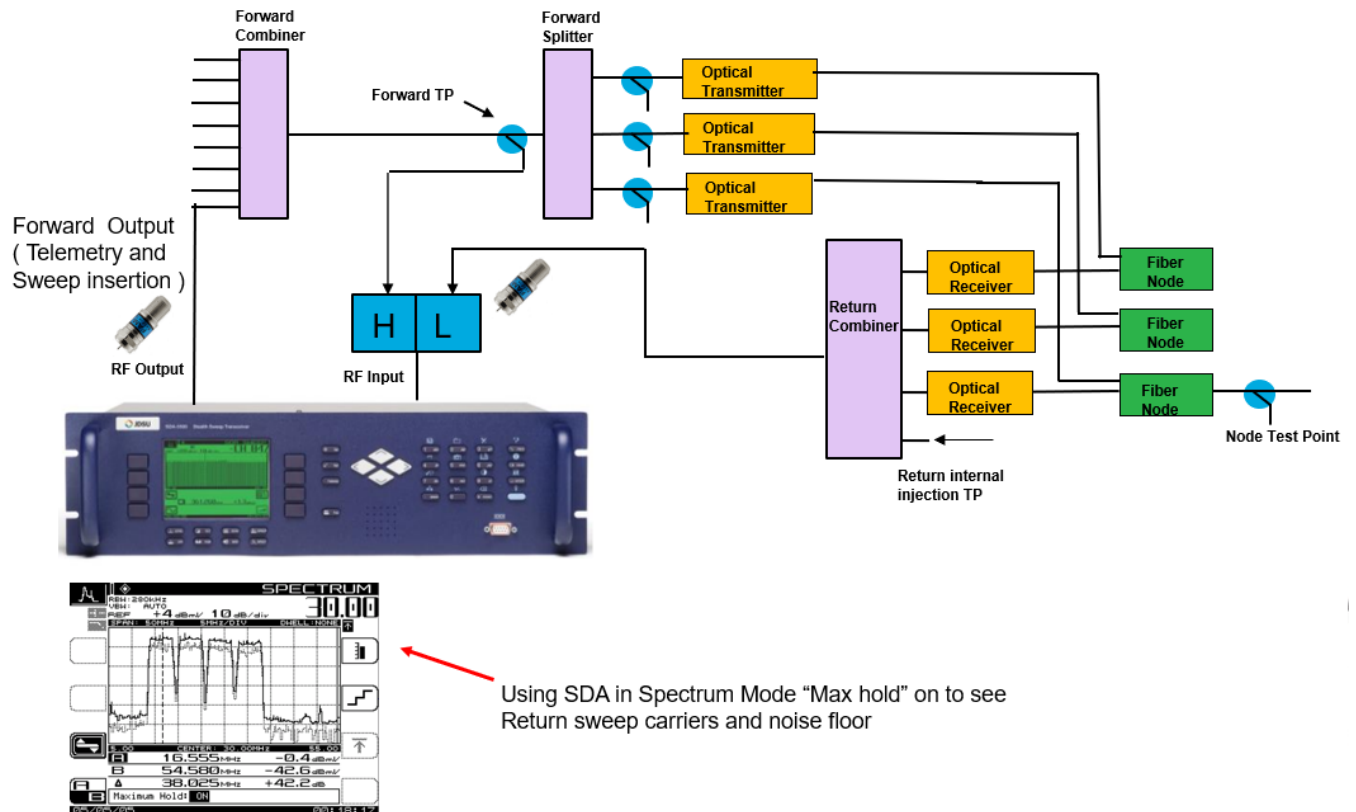- Install SDA 5500
- Test input level with ONX Channel Check

Figure 1: SDA Forward 5500 Installation

What is the maximum amount of return receiver can I combine to the SDA 5500/5510?

- It all depends on the noise floor of the return telemetry frequency.
- Telemetry C/N needs to be at > -20 Telemetry. Optimization is typically 0 dBmV at input of the SDA 5500/5510
- With a typical noise floor of - 35 dBmV @ **Return telemetry Frequency**
  - Combined noise for 8 ports is – 26 dBmV based on power combining
  - Combined noise for 16 ports is -23 dBmV based on power combining

Setting the Reverse Parameters

Step 1: Determine where you want to telemetry sweep points. See Figure xxx for placement.
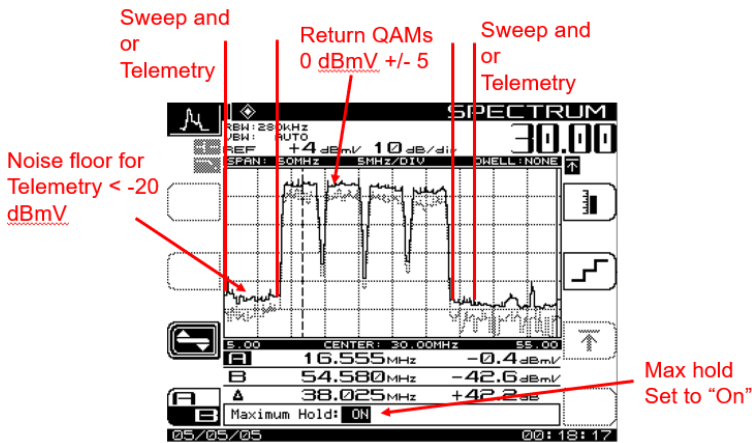

Figure 2: SDA Spectrum

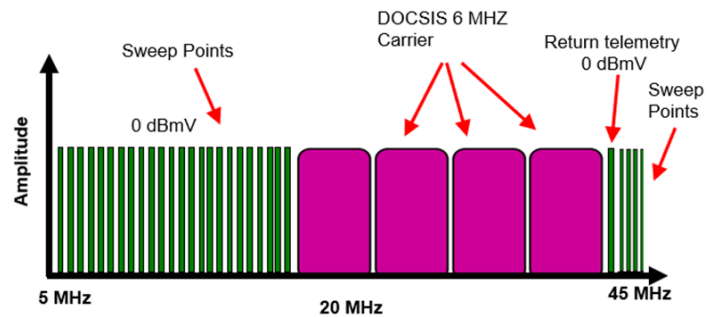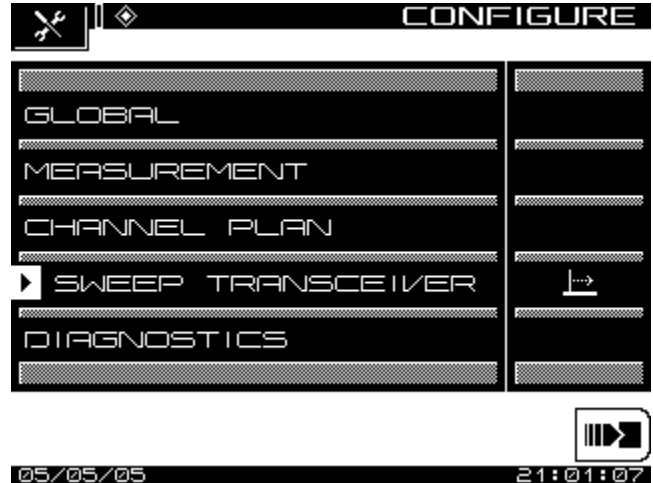Figure 3: Return Frequency guide

Step 2: Press function and select Sweep Receiver on the SDA 5500 anf then press the enter key.

Step 3: Select Mode for Transmit SDA compatible.
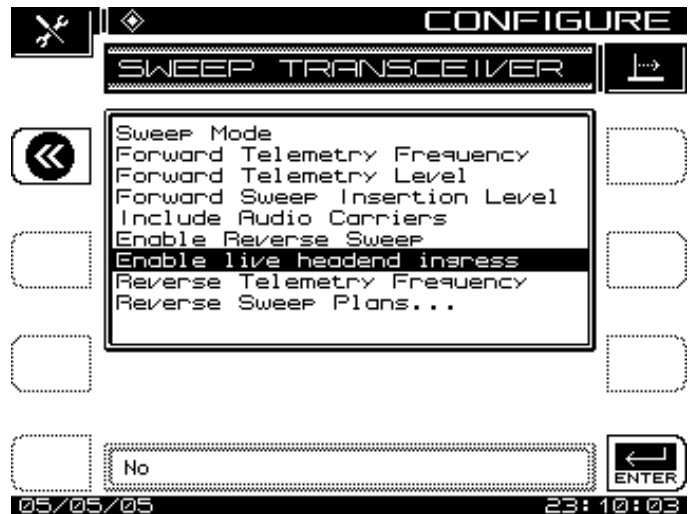Note: It will not work properly in and any other setting.

Step 4: Refer to Charter SDA Forward Setup guide for
Forward Telemetry Frequency
Forward Telemetry Level
Forward Sweep Insertion Level
Include Audio Carriers

Step 5: Enable Reverse Sweep
Set to Yes

```
⚒  ◈                    CONFIGURE
   SWEEP TRANSCEIVER        ⤷
┌────────────────────────────────┐
│ Sweep Mode                     │
│ Forward Telemetry Frequency    │
│ Forward Telemetry Level        │
│ Forward Sweep Insertion Level  │
│ Include Audio Carriers         │
│ █Enable Reverse Sweep█         │
│ Enable live headend ingress    │
│ Reverse Telemetry Frequency    │
│ Reverse Sweep Plans...         │
└────────────────────────────────┘

┌────────────────────────────┐  ┌──────┐
│ █Yes                       │  │ ←    │
└────────────────────────────┘  │ENTER │
05/06/05                      15:54:09
```

Step 6: enable live headend ingress should be set to **NO**

```
⚒  ◈                    CONFIGURE
   SWEEP TRANSCEIVER        ⤷
┌────────────────────────────────┐
│ Sweep Mode                     │
│ Forward Telemetry Frequency    │
│ Forward Telemetry Level        │
│ Forward Sweep Insertion Level  │
│ Include Audio Carriers         │
│ Enable Reverse Sweep           │
│ █Enable live headend ingress█  │
│ Reverse Telemetry Frequency    │
│ Reverse Sweep Plans...         │
└────────────────────────────────┘

┌────────────────────────────┐  ┌──────┐
│ No                         │  │ ←    │
└────────────────────────────┘  │ENTER │
05/05/05                      23:10:03
```

Step 7: Set Reverse telemetry Frequency
See Figure 2 and 3

40 MHZ is default setting.
I have set this to 12 for this setup
Note: Telemetry must be 500 kHz away from the band edge of CMTS carrier
Note the Telemetry and sweep insertion can be at the same frequency. They will never be on at the same time.

```
                                    CONFIGURE
        SWEEP  TRANSCEIVER        |⟶|

    Sweep Mode
    Forward  Telemetry  Frequency
    Forward  Telemetry  Level
    Forward  Sweep  Insertion  Level
    Include  Audio  Carriers
    Enable  Reverse  Sweep
    Enable  live  headend  ingress
    Reverse  Telemetry  Frequency
    Reverse  Sweep  Plans...


         12.00 MHz                   ENTER
    05/05/05                      07:42:20
```

Step 8: Set Reverse Sweep Plans

Select the icon to build reverse sweep plan

```
                                    CONFIGURE
        REVERSE  PLANS           |◀◀|

         Plan Name        Modified
    ✓ REVERSE_PLAN     05/05/05 00:00




    05/05/05                      23:14:24
```

Step 9: Reverse Sweep Name

```
            ◆            CONFIGURE
  BUILD A NEW PLAN        I.

  ⊘   STEP 1        ||||||||
      Enter a name for the new reverse sweep
      plan that will be created.




          Plan Name: REVERSE_PLAN        OK
05/06/05                        01:14:21
```

Step 9: Enter Frequency of the starting sweep points.

```
            ◆            CONFIGURE
  BUILD A NEW PLAN        I.

  ↺   STEP 2        ||||||||
      Enter the frequency of the starting
      sweep point.




          Start Frequency: 5.00 MHz        OK
05/06/05                        01:16:48
```

Step 10: enter the frequency interval

**Note: Default is 1 MHz
I recommend .25 MHz. It has much more resolution and will pick up standing waves better.**

```
            ◆            CONFIGURE
  BUILD A NEW PLAN        I.

  ↺   STEP 3        ||||||||
      Enter the interval between sweep
      points.




          Interval: 1.00 MHz        OK
05/06/05                        01:17:58
```

Step 11: Enter the Stop Frequency
Note: Default is 45 MHz.
I recommend the this to be just before you first DOCSIS carrier,

Example. 16.4 MHZ is my first DOCSIS carrier 16.4 – 3.1 = 13.3

Just before or 13.0 MHZ .

Editing the channel plan you can enter the frequencies at the end of the CMTS carriers

```
CONFIGURE
BUILD A NEW PLAN

STEP 4
Enter the frequency at which to stop
creating sweep points.

Stop Frequency: 13.00 MHz        OK
05/06/05                   01:19:16
```

Step 11: Channel Plan build is complete

```
CONFIGURE
BUILD A NEW PLAN

DONE
The reverse sweep plan has been
created.

OK
05/06/05                   01:21:10
```

Step 11: Press on the icon to finish editing the reverse plan.

Plan Name	Modified
✓ REVERSE_PLAN	05/05/05 00:00

05/05/05   23:14:24

Step 11: Add sweep points past the last QAM carrier

Example 35.6 MHz + 3.1= 38.7
ADD 40, 41, 42, 43,44, 45
Using the
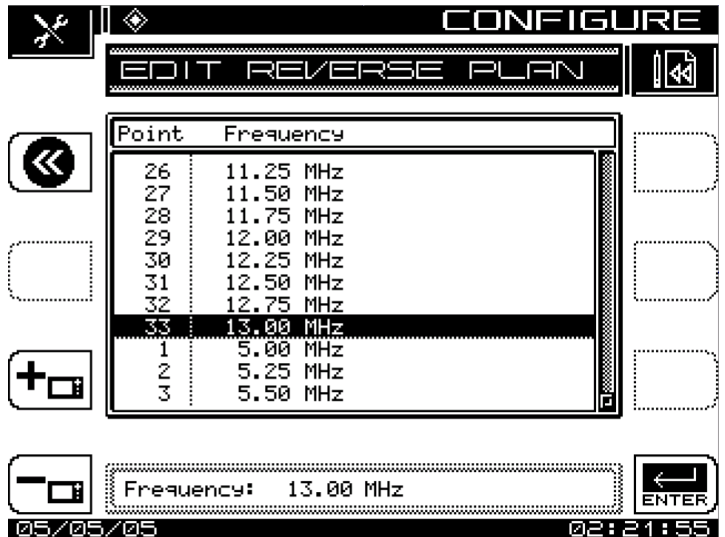
There also may need to remove sweep point carrire using [icon] **the that may interfere with other reverse services.**

EDIT REVERSE PLAN

Point	Frequency
26	11.25 MHz
27	11.50 MHz
28	11.75 MHz
29	12.00 MHz
30	12.25 MHz
31	12.50 MHz
32	12.75 MHz
33	13.00 MHz
1	5.00 MHz
2	5.25 MHz
3	5.50 MHz

Frequency: 13.00 MHz

05/05/05   02:21:55

Step 11: Reverse Channel Plan Complete

EDIT REVERSE PLAN

Point	Frequency
29	12.00 MHz
30	12.25 MHz
31	12.50 MHz
32	12.75 MHz
33	13.00 MHz
34	40.00 MHz
35	41.00 MHz
36	42.00 MHz
37	43.00 MHz
38	44.00 MHz
39	45.00 MHz

Frequency: 45.00 MHz

ENTER

05/05/05   02:34:00

Addendum
Optimizing node and setting Telemetry level
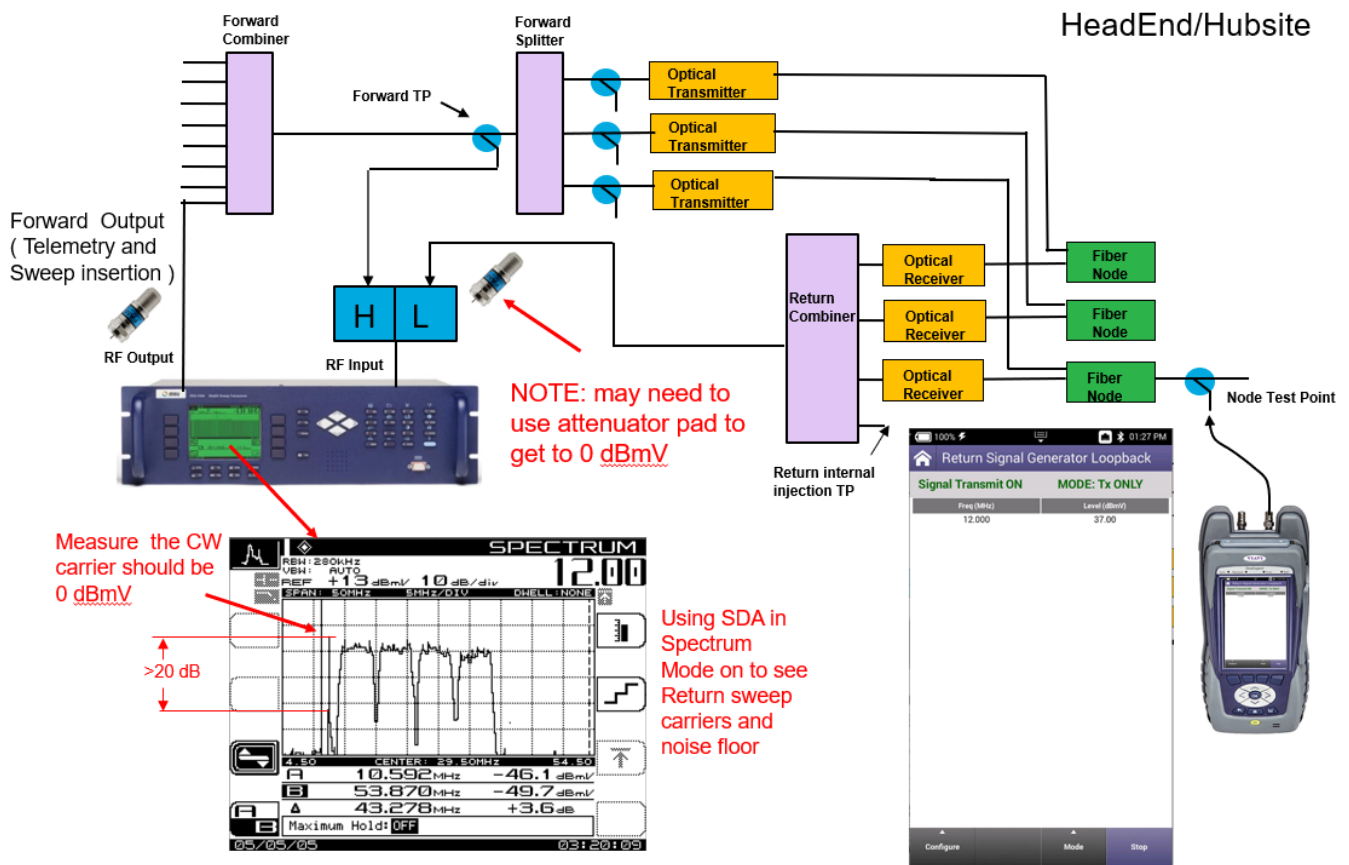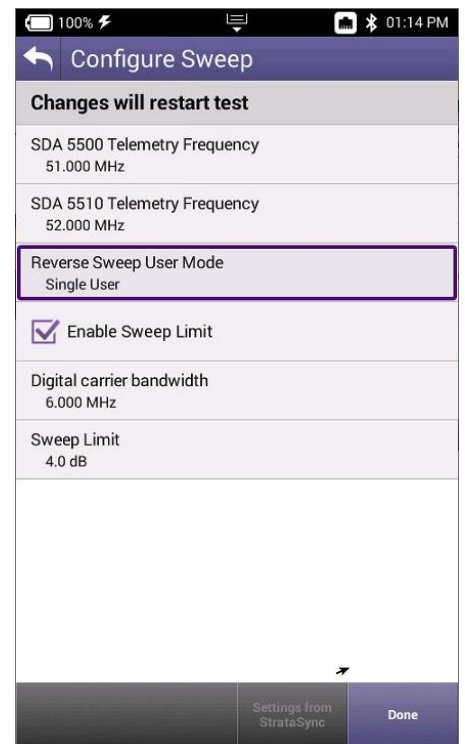

Figure 4: Return Optimization

Step 1:

- Verify Return Carriers at the SDA 5500 input
- Use RSG to Inject typical level 37 dBmV CW @ **return telemetry** frequency carrier into the fiber node
- Use SDA in Spectrum to measure Level

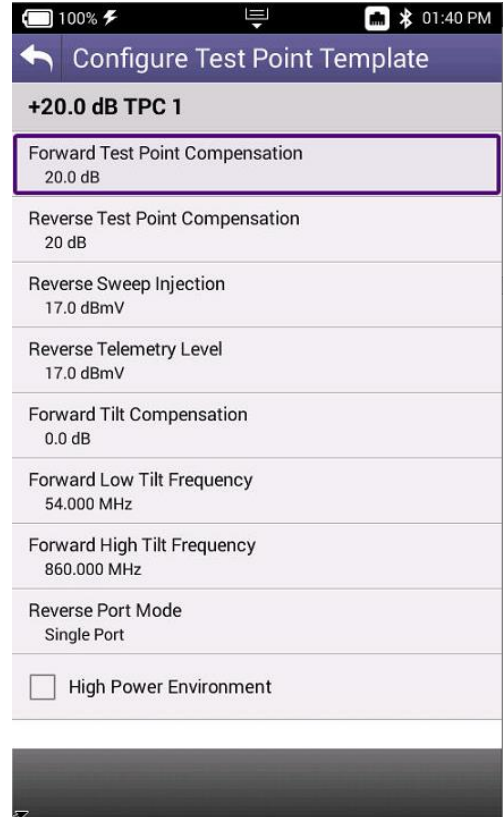**Step 2:** Press the return sweep on ONX then Configure
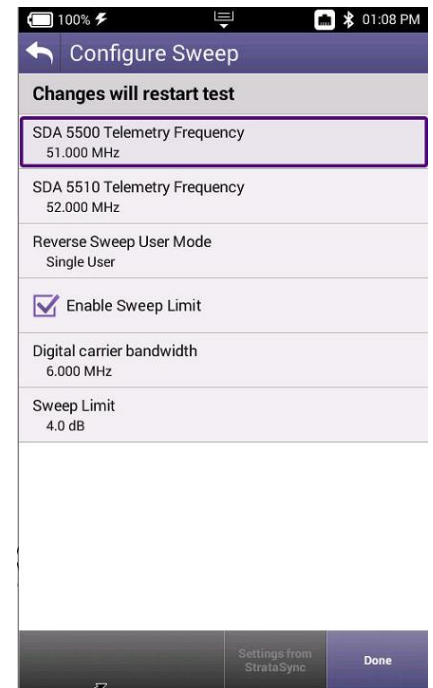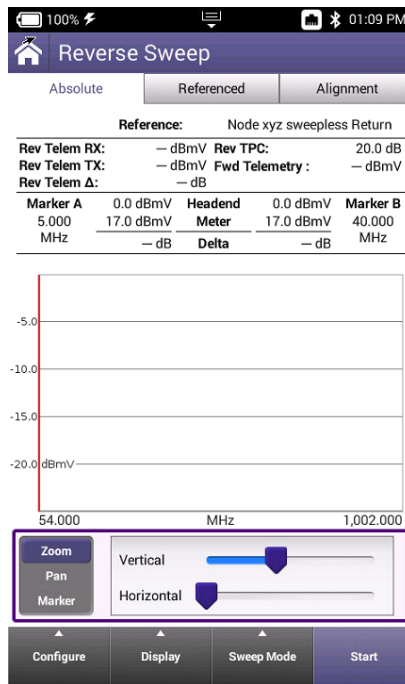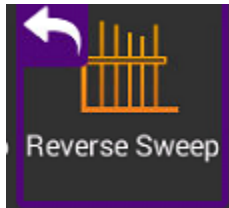
Step 3: Set the correct telemetry for SDA 5500 and Single user

Step 4: Set the correct test point such as shown:

Note: 20 Reverse Test point compensation and 17 dB injection equates to 37dBmV which is the same as optimizing the node in figure 4

Step 5: Reverse sweep