



Information Sheet IS22001

VS1 and VS2.5: Using the Exciter Attenuation Routine with VS Software Version 5.3.0 or later

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INFORMATION SHEET

1 INTRODUCTION

This document describes how to find and use the front panel UI's exciter attenuation (Exc Att) routine, which is a new function available for transmitters operating with software version VS SW 5.3.0 or later. This feature is part of the IPA ALC function and optimizes the exciter DAC Attenuation value, to achieve the IPA power target with an optimal exciter DAC Gain of 70% nominal. If changes to the IPA power level are required, a DAC Gain of 70% allows for fine adjustment of the IPA power level, with no interruptions to transmitter output power, which is an advantage over the coarse adjustment achieved using DAC Attenuation.

1.1 Equipment Affected

This information sheet applies to all VS1 transmitters (Nautel Part # NARF65J* and earlier) and VS2.5 transmitters (Nautel Part # NARF66I* and earlier) that have shipped with, or have been upgraded to, VS software version VS SW 5.3.0 or later. This document does not apply to VS300 transmitters.

1.2 Minimum Software Requirements

VS SW 5.3.0 or later.

1.3 Responsibility for Implementation

This procedure should be carried out by qualified maintenance personnel who are familiar with the user interface for the VS1 or VS2.5 transmitter.

1.4 Scheduling

This procedure should be performed at the earliest convenience of transmitter maintenance personnel, for the following maintenance scenarios:

- After replacing a pre-amp/IPA PWB or Exciter/Control PWB (see paragraph 2.1 and 2.2 for details).
- During troubleshooting of an IPA Output Low alarm (see paragraph 2.3 for details).

The transmitter must be RF On, and at desired output power, when starting an exciter attenuation routine.

1.5 Manpower Requirements

Implementing an exciter attenuation routine will require less than five (5) minutes.

1.6 Special Tools/Test Equipment

No special tools or test equipment are required.

1.7 Materials

No special materials are required to complete the procedure.

1.8 Publications Affected

Information in this document is supplemental to the transmitter's documentation. Where applicable, references are made to sections of the Operation and Maintenance Manual or Troubleshooting Manual.



2 DETERMINING WHEN TO RUN AN EXCITER ATTENUATION ROUTINE

There are several scenarios that require the initiation of an exciter attenuation routine, including:

NOTE

Paragraphs 2.1 through 2.3 reference content in the Responding to Alarms section of the VS Troubleshooting Manual that is affected by the exciter attenuation routine feature. Nautel recommends you use this information to supplement your transmitter documentation.

2.1 After Replacing the Pre-Amp/IPA PWB

With reference to the Pre-Amp/IPA PWB Replacement procedure, add the following step after you re-install the transmitter in its host cabinet, enable ac power, run the Bias Routine, and – for VS1 transmitters only - perform the VS1 IPA Output Power Configuration procedure in Information Sheet IS16007:

- With RF on and the transmitter operating at the desired output power level, initiate an Exc Att Routine using the front panel UI (see **Main Menu -> System Settings -> Factory Settings -> Calibration** menu; refer to the Operations and Maintenance Manual for more detail).

2.2 After Replacing the Exciter/Control PWB

With reference to the Exciter/Control PWB Replacement procedure, add the following steps after you locate and enter the recorded scale factor values in the Fwd Scale and Rfid Scale screens:

- With RF off and the system interlock circuit intact (closed), initiate a Bias Routine using the front panel UI (see **Main Menu -> System Settings -> Factory Settings -> Calibration** menu; refer to the Operations and Maintenance Manual for more detail).
- With RF on and the transmitter operating at the desired output power level, initiate an Exc Att Routine using the front panel UI (see **Main Menu -> System Settings -> Factory Settings -> Calibration** menu; refer to the Operations and Maintenance Manual for more detail).

2.3 During Troubleshooting of an 'IPA Output Low' Alarm

Table 1.1 (Troubleshooting Alarms) in the Responding to Alarms section of the Troubleshooting Manual provides descriptions and troubleshooting action for all alarms.

For the IPA Output Low alarm, replace the content of the **Description and Troubleshooting Action** column with the following content:



This alarm occurs if the pre-amp/IPA PWB's (A5) forward power is less than the IPA Output Low threshold (70% of IPA set-point), and the transmitter's forward power set-point requires a PA Voltage greater than 18 V, or if the following criteria is met:

- Transmitter forward power set-point requires the minimum PA Voltage (18 V)
- Transmitter cannot achieve within 5% of the set-point
- Exciter DAC Gain is greater than 99% (Exciter DAC Gain meter is in the front panel UI's **View Status -> View Meters** menu)

This alarm causes the controller to limit the PA voltage to 30 V. Check for a **+48V Supply Fail** alarm and follow the associated troubleshooting procedure if present. **IPA Fail** and **Pre-amp Fail** alarms may also be present.

If no associated alarms are present: with RF on and the transmitter operating at or near desired output power, initiate the Bias Routine in the front panel's **Main Menu -> System Settings -> Factory Settings -> Calibration** menu and then enable RF (turn RF on) and run the Exc Atten Routine in the same menu to ensure the Exciter DAC Attenuation value is optimal.

If the alarm persists, use a digital multimeter to measure the voltage between pad B on pre-amp/IPA PWB (pre-amp bias) and chassis (ground) and also between pad C on pre-amp/IPA PWB (IPA bias) and chassis (ground). If the voltage is less than 1 V at either of these points, suspect the exciter/control PWB (A1) or related RF output cabling to the pre-amp/IPA PWB (A5). If the voltage is greater than 1 V at both of these points, use a digital multimeter to measure between pad E (IPA volts) on the pre-amp IPA PWB and chassis (ground). If the measured voltage is not within an acceptable range (between +43 V and +48 V), with ac power off, perform a continuity check across F1 of the PS distribution PWB (A2). If the measurement is greater than 1 Ω , replace the fuse (Nautel Part # FA57 in the ancillary kit). If the measurement is less than 1 Ω , or replacing the fuse does not clear the alarm, replace the pre-amp/IPA PWB (A5) (see "Preamp/ IPA PWB replacement").

If the voltage on pad E is acceptable, use a digital multimeter to measure between pad D (pre-amp volts) on the pre-amp IPA PWB and chassis (ground). If the measured voltage is not within an acceptable range (between +43 V and +48 V), replace the preamp/ IPA PWB (A5) (see "Pre-amp/IPA PWB replacement"). If the voltage is acceptable, or replacing the pre-amp/IPA PWB does not clear the alarm condition, suspect the combiner interface PWB (A12) (see "Combiner Interface PWB Replacement") or the exciter/control PWB (A1) (see "Exciter/Control PWB Replacement").



3 INITIATING AN EXCITER ATTENUATION ROUTINE

This section provides instruction to locate and initiate the exciter attenuation routine in the front panel UI. See additional content on this front panel UI menu in the Calibration paragraph of Section 2, Operating the Transmitter, in the Operation and Maintenance Manual.

- (a) From the front panel UI, select **System Settings -> Factory Settings -> Calibration** from the Main Menu. See Figure 1.

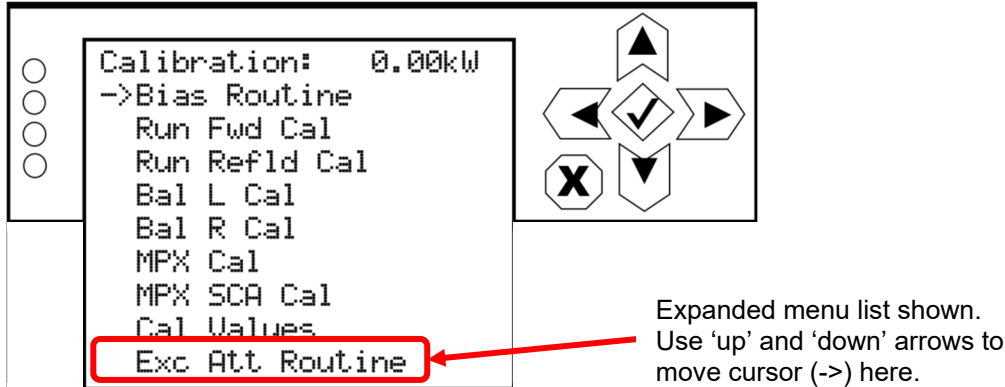


Figure 1: Front Panel UI – Calibration Menu

- (b) See paragraph 2 to determine the scenarios that might require the exciter attenuation routine. When instructed, initiate an exciter attenuation routine as described in step (c).

NOTE

Ensure that the RF power stage is enabled (RF On) and the transmitter is operating at the desired output power before running the Exc Att Routine.

- (c) Use the 'down' arrow to place the cursor next to Exc Att Routine, then press the accept (checkmark) button to enter the sub-menu. In the sub-menu, press the accept (checkmark) button to start the routine. A line will display to indicate the progress. When complete, the display will again read "Press √ to begin". Press X to return to the previous menu.

If you have any questions or require additional assistance, please contact Nautel's Customer Service Department at:

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