Exhibit 8 – Users Manual

SpectraPoint Wireless LLC
SP2000 Series Node Transmitter

FCC ID: NNSTX2000-HG-99

Model Number: TX2000-28-HG-510

Information Provided in this Exhibit:

Operating Instructions for the SpectraPoint High Gain Transmitter (Stand-Alone Configuration)

The SpectraPoint Wireless High Gain Transmitter, under operational conditions is under control of the SpectraPoint Element Controller and Network Management software which automatically determines the operating frequencies and power levels and monitors the performance of the system.

The User Manuals delivered with the SpectraPoint System describes the installation of the entire system but does not include stand-alone operation of the individual components of the system. Therefore, this document describes the equipment setup and operation employed for stand-alone operation of the High Gain Transmitter, as applicable to compliance testing.

For stand-alone testing such as functional checkout or compliance testing, this user's manual provides the instructions so that the High Gain Transmitter may be operated at maximum rated output power with automatic power control disabled. In addition, the High Gain Transmitter may be commanded to various operating frequencies within the allocated band of operation and modulated with actual or simulated IF input signals.

Instructions for Stand-Alone Operation of the SpectraPont High Gain Transmitter

1.0 Scope

This document provides the instructions for operation of a single SpectraPoint High Gain Transmitter for test purposes (i.e., without the control of the SpectraPoint System).

2.0 Introduction

The SpectraPoint High Gain Transmitters, when operating under control of the SpectraPoint System, receive an RF reference tone and QPSK modulated L-Band intermediate frequency (IF) signals (telephony, digitized video or digital data) from the Base equipment located in the LMDS hub. The Transmitter upconverts this QPSK modulated signal to Ka-Band and transmits it "downstream" to the Customer Premises Equipment (subscriber) Roof Unit and Network Interface Unit (NIU).

For test purposes, the QPSK modulated input signal to the Roof Unit transmitter, at the appropriate center frequency, modulation, bandwidth and level is provided by test hardware and software which is defined in this document.

3.0 Interconnection of Support Equipment

The interconnection of the High Gain Transmitter with the test support equipment is shown in figure 8-1. The support hardware and software is shown in Table 8-1.

Using this support test equipment, the High Gain Transmitter will produce single or multiple QPSK phase modulated Ka-Band output at user-selected bandwidths (as in the SpectraPoint System).

4.0 Description of the Test and Support Equipment

The support equipment required to operate the High Gain Transmitter in a stand-alone mode is shown in Figure 8-1 and consists of:

- DC power source for the High Gain Transmitter
- 960 MHz reference signal
- source of the QPSK digitally-modulated signal (Rohde & Schwarz AMIQ Arbitrary Waveform Generator and SMIQ Vector Signal Generator)
- Personal Computer with WinSim software to generate the QPSK I and Q Signals at the AMIQ and NA1 software to provide RS-485 control to the High Gain Transmitter.

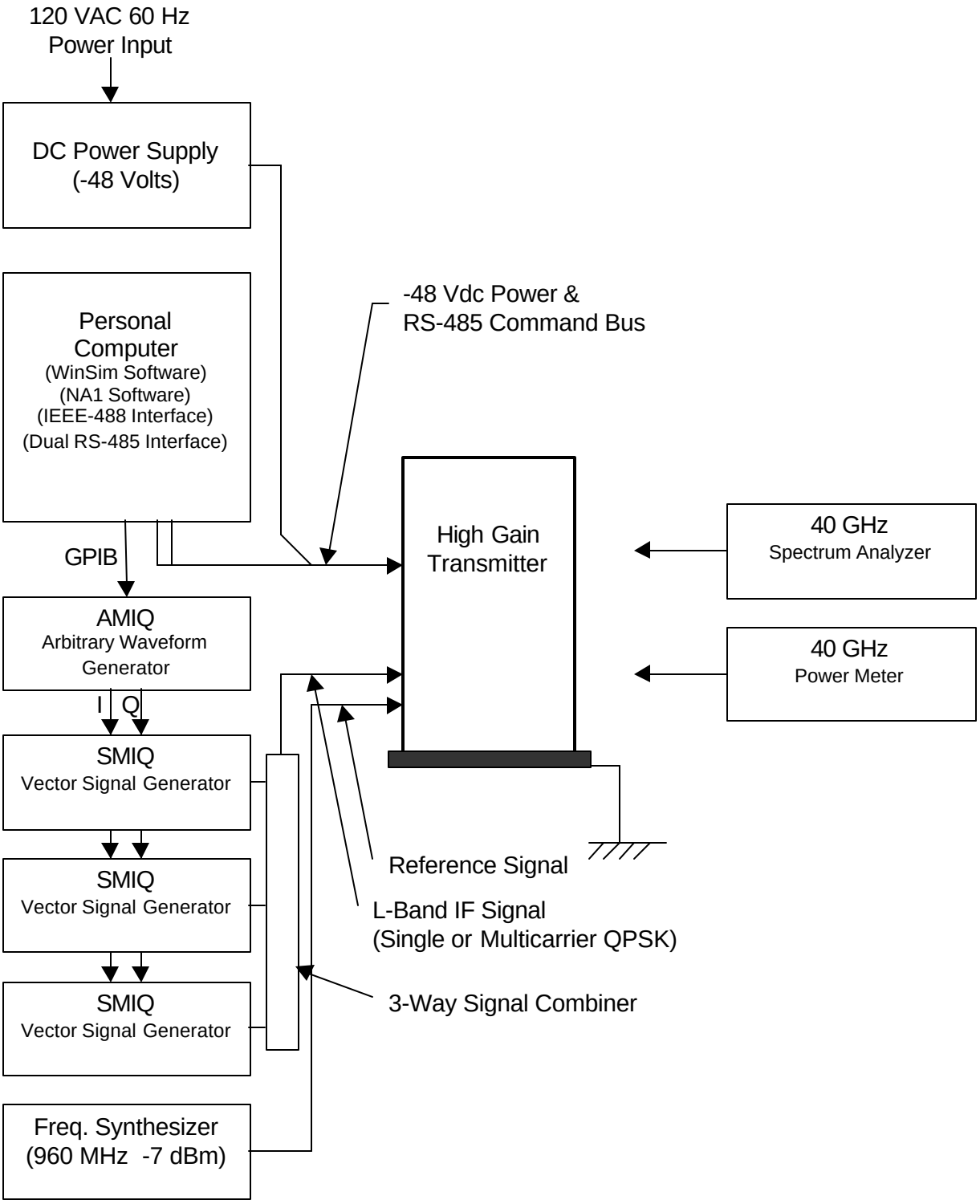

Figure 8-1 High Gain Transmitter Test and Support Equipment

4.1 Generation of QPSK Test Signals

Test signals for the High Gain Transmitter, simulating I/F input from the SpectraPoint Base Equipment, are generated in the AMIQ and transferred by operator command to the SMIQ.

The WinSim software program is launched by double-clicking on the WinSim icon or by selection from the Windows Program Start menu. The modulation parameters may be manually entered through the PC keyboard or recalled from predefined parameters stored on disk.

The NIU is capable of generating QPSK-modulated signals ranging from approximately1.5 MHz bandwidth to 14.5 MHz bandwidth depending on a variety of operating rates and error correction schemes required for reliable operation of an SpectraPoint LMDS installation. The CPE Roof Unit test and support equipment has the capability to simulate these complex signals and provide the DC power and enable command to operate the unit for test and analysis.

4.1.1 Test Signals

The standard signal is stored in a data file on disk representing the widest bandwidth signal that will be produced by the SpectraPoint Base Channel Group in operation. Refer to Table 8-1 for the parameters.

Table 8.1 Parameters for Rohde & Schwarz AMIQ Modulation Setup

AMIQ Window	Parameter	Setting
Data Source	PRBS	PRBS 9
Modulation	Coding	None
Modulation	Type	QPSK
Modulation	Sequence Length	10,000
Modulation	Filter Function	Root Cosine
Modulation	Window Function	Rect
Modulation	Symbol Rate	27.9 MSps
Modulation	Oversampling	3
Main	Sampling Rate	83.700MHz
Main	Samples	30,000

4.1.2 Single and Multiple Carrier Signals

One, two or three wideband QPSK channels may be applied to a High Gain Transmitter in normal operation. The test support equipment setup shown in Figure 8-1 shows three SMIQ vector signal generators driven be one AMIQ arbitrary waveform generator.

For single-channel operation, only one SMIQ vector signal generator is required. For two-channel or three –channel operation, two or three SMIQ vector signal generators will be required.

4.2 Command/Control of High Gain Transmitter

The operation of the High Gain Transmitter is software controlled using the NA1 software on the Personal Computer and transmitted to the High Gain Transmitter over the RS-485 bus (part of the power/command multiconductor interface cable to the High Gain Transmitter). The control program is activated by double-clicking on the NA1 program icon. Apply –48 Vdc power to the High Gain Transmitter prior to changing operating parameters.

Caution:

Do not operate the High Gain Transmitter without a proper load on the RF output port, either the High Gain antenna assembly or a dummy load.

If operating into the High Gain antenna, stay toward the rear (connector end) of the transmitter to avoid potential hazardous RF radiation.

4.2.1 On the main NA1 window (refer to Figure 8-2), single-click on the Solid State Transmitter "button".

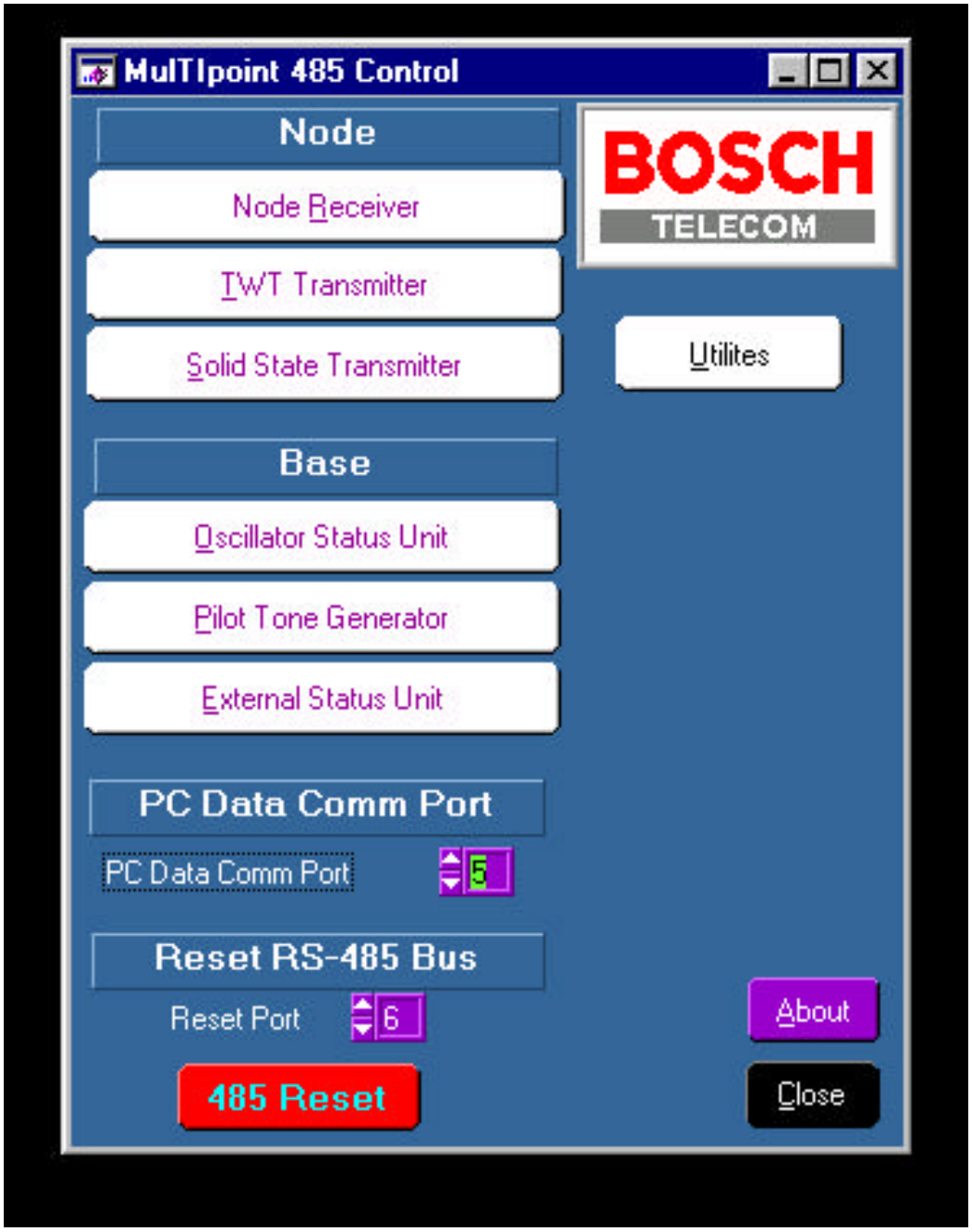

Figure 8-2 NA1 Main Window

4.2.2 On the Parameters Selection Window (refer to Figure 8-3), update the parameters per Table 8-1:

Table 8-1 SpectraPoint High Gain Transmitter Operating Mode Setup

Transmitter Parameter	**Range**	**Setting**
Transmitter Address	129 to 191	191
Set Light	On/Off	Don't Care
ALC Mode	On/Off	Off
RF Bit Threshold	12.0 to 30.0 [dBm]	**Do not** press "Send"
Power Control	On/Off	On, press "Send"
Read from EPROM	0 to 255	**Do not** press "Send"
Store to EPROM	0 to 255	**Do not** press "Send"
LO Frequency	25880 – 27050 MHz	26550 MHz, press "Send"
IF Attenuation	0 – 40 [dB]	0 dB, press "Send"
RF Target	12.0 to 30.0 [dBm]	**Do not** press "Send"
IF Bit Threshold	-17.0 to 3.0 [dBm]	**Do not** press "Send"

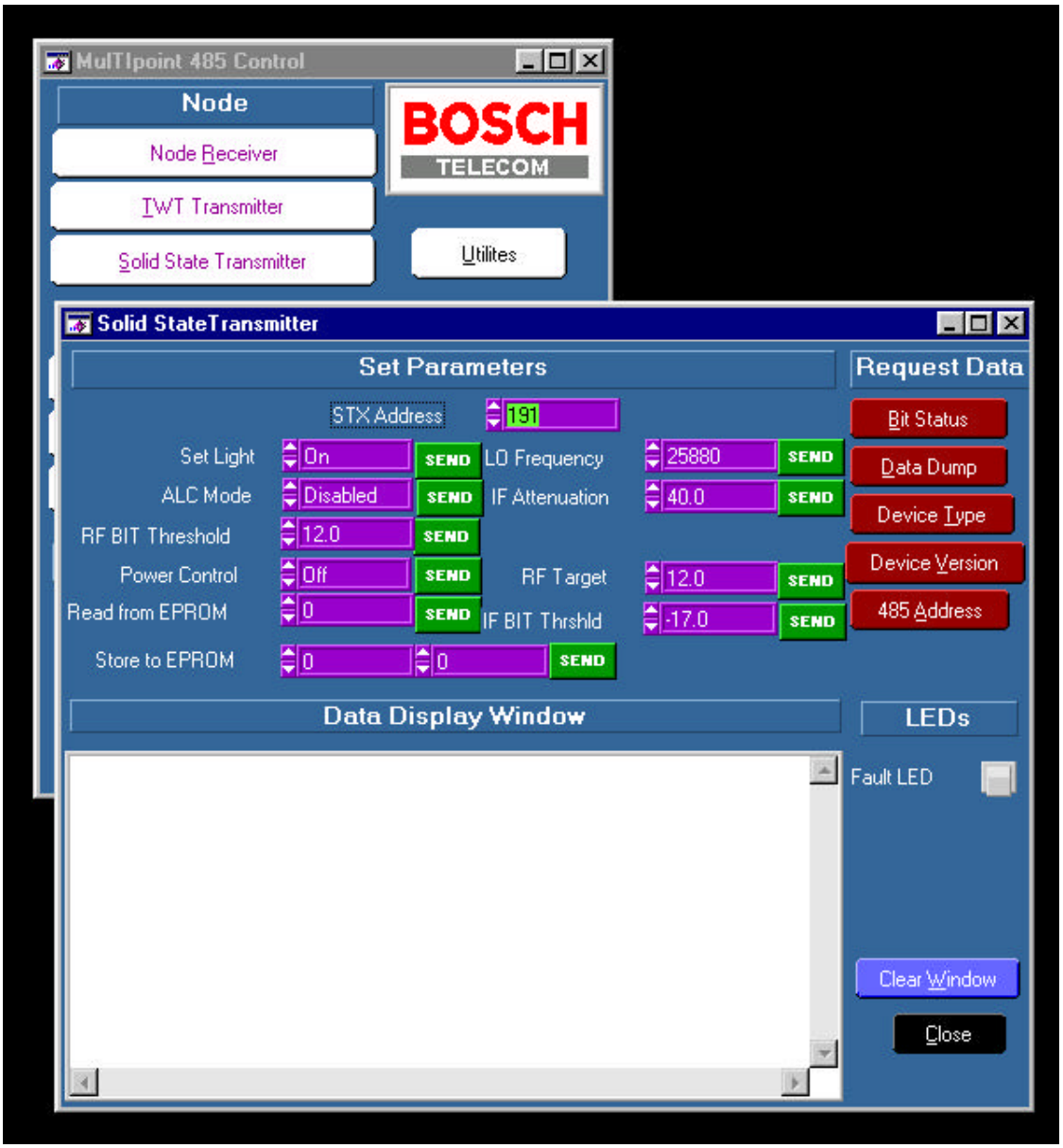

Figure 8-3 Solid State Transmitter Parameter Selection Window

4.2.3 Press the Data Dump “button” to display status of the High Gain Transmitter and verify that commands have been properly processed.

4.2.4 Increase the IF power input for the desired RF output power level.