Section

1

GENERAL DESCRIPTION

1-1. INTRODUCTION

This manual contains information and procedures for installation, operation, and maintenance of Powerwave's Generation 3.1 amplifier system. The manual is organized into six sections as follows:

Section 1. General Description
Section 2. Installation
Section 3. Operating Instructions
Section 4. Principles of Operation
Section 5. Maintenance
Section 6. Troubleshooting

1-2. GENERAL DESCRIPTION

The G3X-800 Series (NTL107AA) amplifier (figure 1-1) is a linear, feed-forward power amplifier that operates in the 25-MHz frequency band from 869 MHz to 894 MHz. The amplifier can simultaneously transmit multiple frequencies, with better than -65 dBc third order intermodulation distortion (IMD). The amplifier system is modular in design, and is ideally suited for use in AMPS/TDMA/CDMA base stations. The plug-in G3X-800 Series (NTL107AA) amplifier modules can each provide 110 watts of power and function completely independently of each other. The amplifier modules are designed for parallel operation to produce high peak power output and backup redundancy for remote applications. The system is housed in the MCR20XX Series (NTL107AC) subrack (figure 1-2) which holds two G3X-800 Series (NTL107AA) amplifiers to produce up to 200 watts output. All solid-state, the system is designed to provide trouble-free operation with minimum maintenance. The system's modular construction and unique and highly effective LED-based operational status and fault indicators help minimize downtime. The turn-on and turn-off sequences of voltages are fully automatic, as is overload protection and recycling. Inadvertent operator damage from front panel manipulation is virtually impossible.

Notice

To comply with FCC regulations, no channels existing within 200 kHz spacing from the edges of any frequency block are to be used for transmission.

The MCR20XX Series (NTL107AC) subrack contains an RF power splitter/combiner and a control module that monitors the functional status of all plug-in amplifiers. The rear panel of the subrack has the system RF I/O connectors and DC power input terminals. The front panel of each amplifier module has unit level status/fault indicators and a power on/off circuit breaker. Primary power for the amplifier system is +27 Vdc. Cooling for each plug-in amplifier module is provided by two fans mounted on the front and two on the rear of the module. The fans draw outside air through the front of the module and exhaust hot air out through the rear of the module.

1-3. FUNCTIONAL AND PHYSICAL SPECIFICATIONS

Functional and physical specifications for the amplifier system are listed in table 1-2.

1-4. EQUIPMENT CHANGES

Powerwave Technologies, Inc. reserves the right to make minor changes to the equipment, including but not necessarily limited to component substitution and circuitry changes. Changes that impact this manual may subsequently be incorporated in a later revision of this manual.

1-5. ORDERING INFORMATION

Table 1-1 following gives the part numbers and descriptions to be used when ordering either an entire system or individual major components that comprise the system.

Table 1-1. Major System Components

SYSTEM ORDER NUMBER	DESCRIPTION OF SYSTEM NUMBER	SUB-COMPONENT MODEL NUMBER	QTY PER SYSTEM	DESCRIPTION OF SUB-COMPONENT MODEL NUMBER
MCR20XX Series (NTL107AC)	200 W 869-894 MHz Linear System for Base Station Equipment.	MCR20XX Series (NTL107AC)	1	2-Unit 23” Subrack.
		G3X-800 Series (NTL107AA)	2	110 W 869-894 MHz Amplifier Module.
		800-00972-001	4	Front fan assembly (Intake)
		800-00972-002	4	Rear fan assembly (Exhaust)

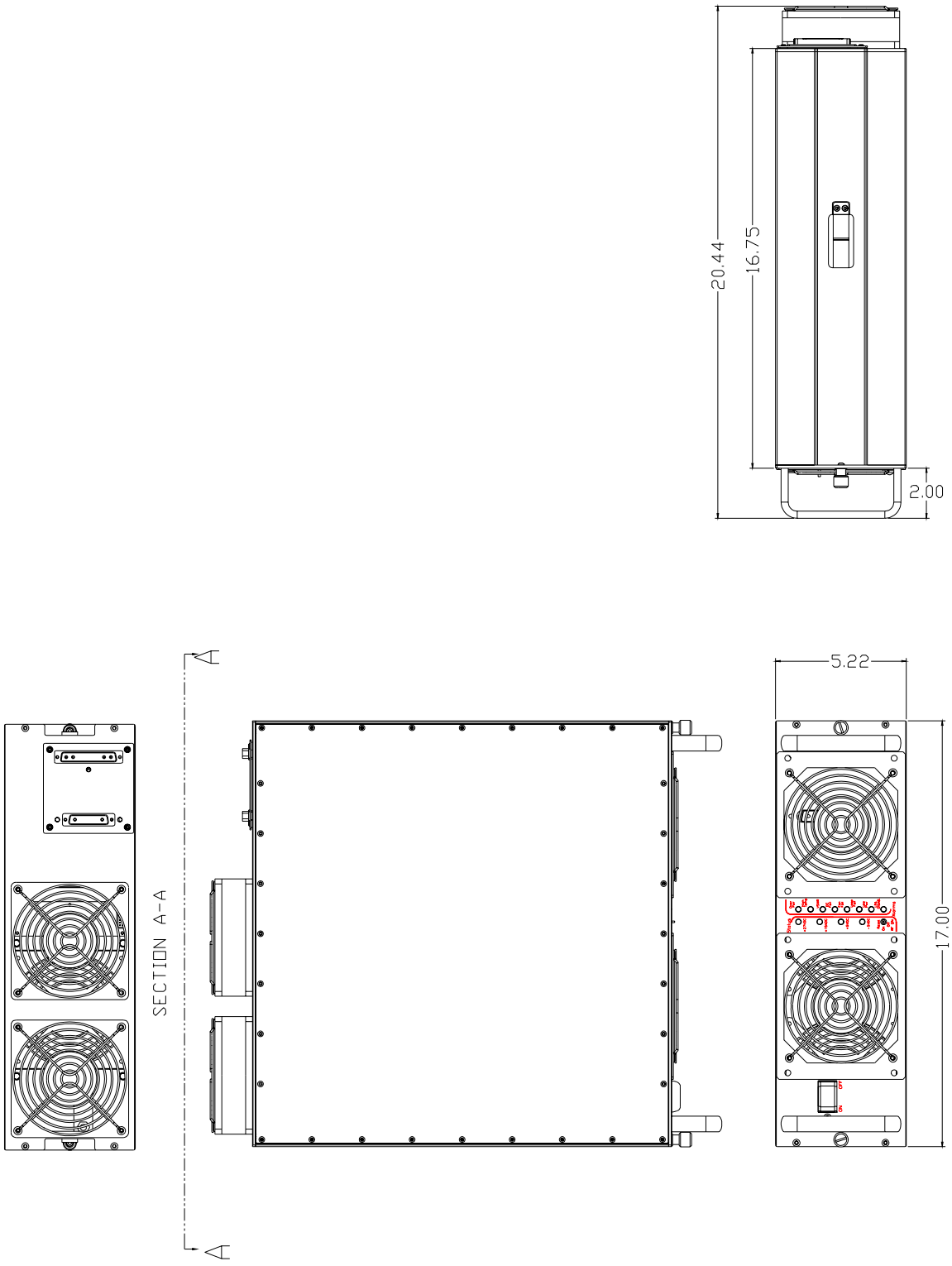

Figure 1-1. G3X-800 Series (NTL107AA) Amplifier

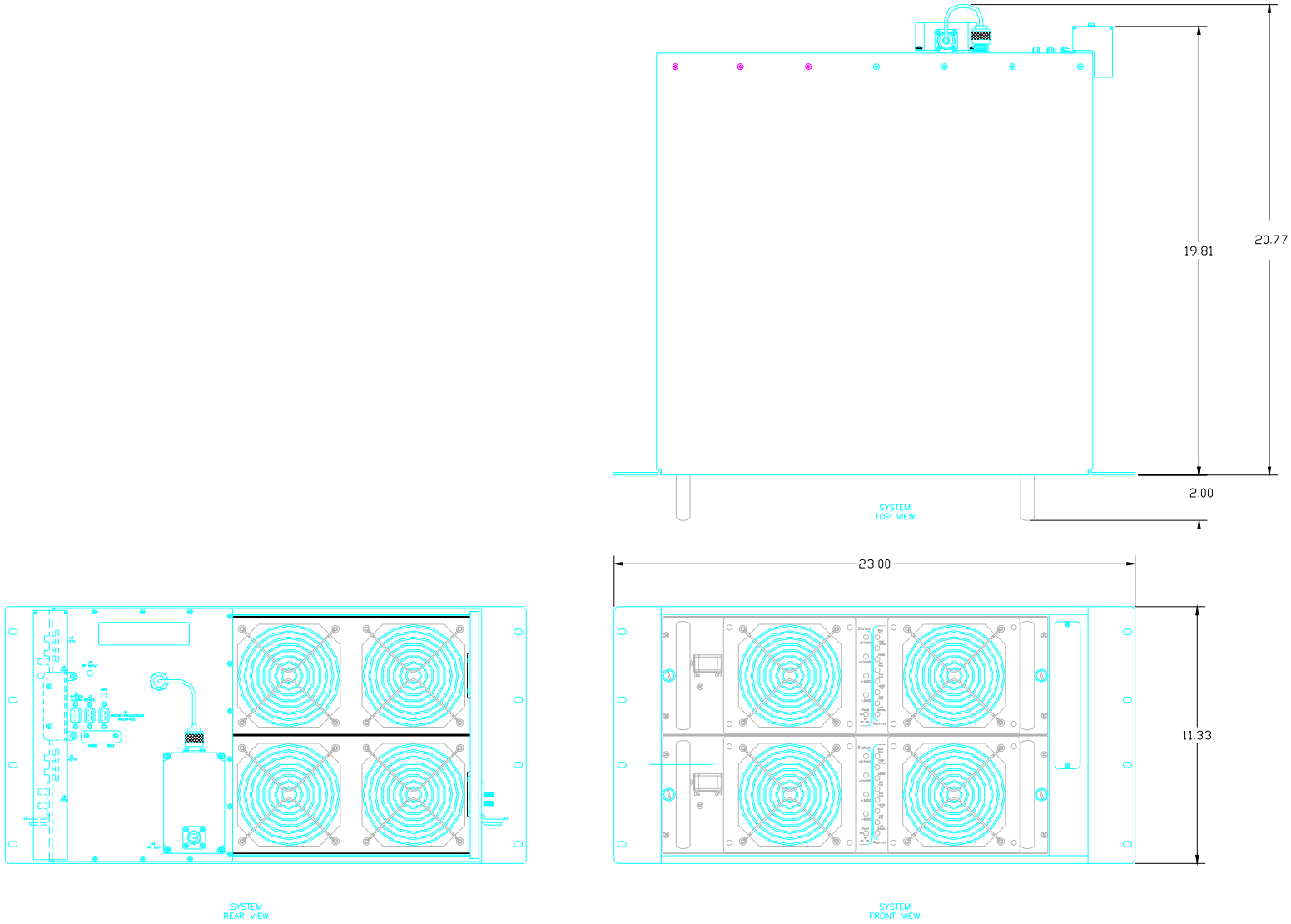

Figure 1–2. MCR20XX Series (NTL107AC) Subrack with Two Amplifiers

Table 1-2. Generation 3.1 Multicarrier Cellular Amplifier System Functional Specifications

Frequency Range:	869-894 MHz
Total Output Power (Minimum) in MCR20XX (NTL107AA) System:	110 W typical (1 Module) 200 W typical (2 Modules)
Maximum Input Power	Overdrive fault activates when input power >5 dBm
Intermodulation Distortion and In-Band Spurious:	-68 dBc (Typical) @ +24 to +28 Vdc @ 200 Watts (-65 dBc (Max) @ +21.7 to +24 Vdc)
Nominal RF Gain:	31 ±1 dB to 49 ±1 dB Adjustable
Gain Variation:	± 0.6 dB @ 27 Vdc ±1 Vdc + 0.6 / -0.8 dB @ 24 to 26 Vdc
Output Port Return Loss:	16 dB (Min)
Output Protection:	Mismatch Protected (Isolator)
Input Port Return Loss:	16 dB (Min)
Second Harmonic:	-13 dBm (Max)
Out of Band Spurious:	-60 dBc (Max) @ +24 to +28 Vdc
DC Input Voltage:	21.7 to 30 Vdc (24 to 28 Vdc for rated operation)
DC Input Current:	110 Amps (Typical) @ 27 ±1 Vdc Input, 200 Watts
PA Self Protection:	MCA Disabled Upon 5-Second Continuous Alarm
Operating Temperature:	-5 ºC to +60 ºC Ambient
Storage Temperature:	-40 ºC to +85 ºC
Operating Humidity:	5% - 95% Relative Humidity (Noncondensing)
Storage Humidity:	0% - 95 % Relative Humidity (Noncondensing)
Connectors DC Power: RF INPUT: RF OUT (Antenna): SYSTEM ALARM: RS-485 MICROPROCESSOR INTERFACE	 ¼-20 studs SMA Type N 9-Pin D-Subminiature Female 9-Pin D-Subminiature Female 9-Pin D-Subminiature Female
Alarms	Over Power, VSWR, DC Failure, High Temperature, Loop Failure, Fan Failure
Monitors	Forward Power and Reverse Power
Dimensions: G3X-800 Series (NTL107AA) Amplifier: MCR20XX Series (NTL107AC) Subrack:	 5.22" High, 17.00” Wide, 20.44” Deep (Including handles, rear fans) 11.33” High, 23.00” Wide, 22.77” Deep (With amplifiers inserted)