NWPA2040-54

200 – 400MHz 250W CW
Broadband SSPA

GENERAL DESCRIPTION

The NWPA2040-54 is a broadband Solid-State Power Amplifier offering 250W (54dBm) CW output power capability covering the frequency range from 200MHz to 400MHz.

The unit includes built-in Automatic Level Control (ALC) as well built-in fault detection and telemetry. The NWPA2040-54 includes high reliability forced air cooling fans.

The unit operates from 100-240VAC input to a high efficiency Electronic Power Conditioner (EPC) which provides multiple output voltages to the RF and monitor/control circuits.

Built-in test functions enable remote sensing of bias voltages, current, temperature, input/output RF power level, as well as functional control (e.g. RF ON/OFF switching) via an Ethernet interface. A Graphical User Interface (GUI) via a standard web browser is provided. Other protocols (MODBUS, SCPI, CANBUS, or proprietary secured protocol) are also available.

FEATURES

- Field-replaceable SSPA bricks, Power Supply, Control Unit and Fans
- Graceful degradation capability
- Solid-state high linearity design
- Remote Control and Monitor via Ethernet (TCP/IP, MODBUS, other proprietary optional)
- Web GUI for remote diagnostics via LAN
- Automatic Level Control
- Main RF Connectors: Input & Output [Type-N, F]
- Rack Slides, Handles and Rackmount Bracket

APPLICATIONS

- Communication Base Stations
- Repeaters
- Defense

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ELECTRICAL PARAMETERS

Parameter	Unit	Min	Typ	Max	Remarks
Operating Frequency Range (BW)	MHz	200		400	
CW Saturated Output Power (P_{SAT}) [1]	W	250			
Nominal Output Power (P_{OUT})	W		200		
Power Gain @ P_{OUT}	dB	53			
Input Power (P_{IN}) for P_{OUT}	dBm		0.0		
Input Power Range in ALC mode	dBm	-2.0		+2.0	
Nominal Output Power Flatness / Leveled ALC (ΔG)	dB			±0.5	
Input Return Loss (S_{11})	dB			-20	
Noise Figure @ maximum gain (NF)	dB			20	
3rd Order Intermodulation Distortion (IM3) 2-Tone @ 48dBm/Tone, 1MHz Spacing	dBc			-20	
2nd Harmonics @ rated P_{OUT}	dBc		-20	-15	
3rd Harmonics @ rated P_{OUT}	dBc		-25	-18	
Spurious Signals (Spur)	dBc			-60	
Operating Voltage (V_{AC})	V	100	120	240	1 Phase
Power Consumption (P_D) @ Pout	W		600	700	

Notes:
1) Measured in manual gain control mode (MGC)

FIELD REPLACEABLE SUBASSEMBLIES

Subassembly	Remarks
SSPA Bricks	Reduces cost of ownership and system down time
Power Supply	Reduces cost of ownership and system down time
Fans	Reduces cost of ownership and system down time

MECHANICAL AND ENVIRONMENTAL PARAMETERS

Parameter	Unit	Min	Typ	Max	Remarks
Operating Temperature Range (T$_A$)	°C	-10		+50	
Non-operating Temperature Range (T$_{STG}$)	°C	-40		+85	
Relative Humidity non-condensing (RH)	%			95	
Shock / Vibration - MIL-STD-810F Shock Method 516.5, Vibration Method 514.5 (SH / VI)	-				
Dimension W x H x D	Inch / mm		17.00 x 5.25 x 20.00 / 431.80 x 133.35 x 508.00		Excluding connectors, handles, brackets
Weight	Pound		50		
RF Connectors Input / Output	-		N-type, Female		
MTBF	Hours		87,000		@30°C operation
Cooling	-		Build-in forced air cooling		

PROTECTION MECHANISMS

Parameter	Unit	Min	Typ	Max	Remarks
Input Overdrive	dBm			+10.0	The SSPA will shut down if the input exceeds the threshold (factory default: +4dBm)
VSWR Protection	-			3:1	The SSPA will shut down if exceeding 3:1 VSWR Load
Thermal Shutdown	°C	+52			
Thermal – Graceful Degradation	°C		+40		Temperature at which output power will begin to be reduced below +54dBm saturated output power
Default Data Recovery	-				Factory Default Calibration Recovery on System Failure

POWER AND COMMUNICATION INTERFACES

Parameter	Unit	Min	Typ	Max	Remarks
Ethernet	-		RJ45		Network Management of Unit and Web Interface
Local Diagnosis and Control	-		D-SUB 9		RS-232 Debug Port, local unit management
AC Power	-		IEC 320-C14		AC connector and cord included

Table 1: Local Unit Management Interfaces

PIN ID	Signal	Comment
1	N/A	Reserved I/O
2	INTCOM_TXD	RS-232 Debug Communication TXD
3	INTCOM_RXD	RS-232 Debug Communication RXD
4	N/A	Reserved I/O
5	GND	Ground
6	N/A	Reserved I/O
7	N/A	Reserved I/O
8	N/A	Reserved I/O
9	N/A	Reserved I/O

MONITORING AND CONTROL INTERFACE

The SSPA can be monitored and controlled via a web Graphical User Interface (GUI). The communication is established once the unit is connected to an Ethernet TCP/IP port to a LAN. In addition there is possibility for another communication link, for local connection through RS232 via *TBD* protocol. The web browser and the unit's IP address (IPV4), allows ease of access with the benefit of multi-level security. The embedded control system runs a RTOS, while having a built-in memory for event recording and logs, and factory setup features. Optionally, higher-level communication protocols (e.g. MODBUS, SCPI, CAN-Bus) can be implemented.

In addition to remote access, the SSPA provides local front panel controls and indicators for basic operation and status monitoring without requiring network access.

The following parameters are reported:
- Temperature
- Voltage
- Current
- Input / Output RF Power Status
- Fault/Alarm Status
- Communication Link Status

The following functions can be remotely controlled:
- RF Power ON / OFF
- Transmitter Reset
- Network IP configuration (DHCP/Static)
- Threshold Settings
- SSPA Standby / Operate (optional)
- (further options on request)

Local front panel controls and indicators:
- RF Power ON/OFF Pushbutton
- Network Reset Pushbutton
- SSPA ON/OFF Status Indicator
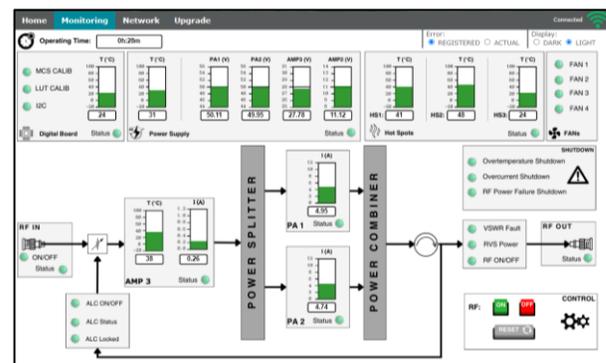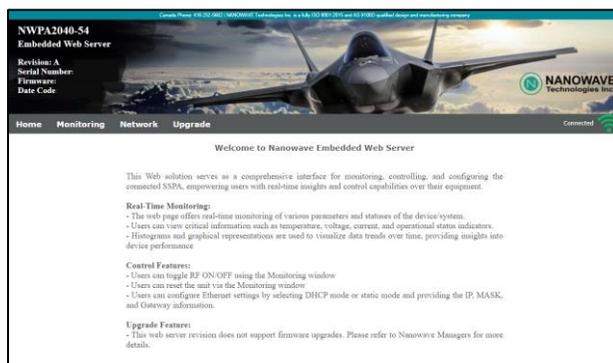- Unit Health Status Indicator

Figure 1: Screenshots of GUI for Remote Diagnostics

ADDITIONAL FEATURES

- Marking: The unit is marked with manufacturer part number, date code, and serial number.
- All plating and painting is RoHS compliant

For further information please contact NANOWAVE Technologies Inc. at **_sales@nanowavetech.com_**, or call at (+1) 416-252-5602.

Note: Specifications subject to change without notice.