NX50 AM Transmitter

making digital broadcasting **work** PHONE +1.902.823.2233 FAX +1.902.823.3183 info@nautel.com www.nautel.com

GENERAL

Transmitter Type
Medium wave, AM, 100% solid state

Configuration
Twenty RF power modules, each including a single integrated RF amplifier/modulator

No frequency dependant parts in RF module

Each module is hot pluggable and has internal microcontroller for protection and monitoring over a serial bus
Short circuit protection at the module level offers an added layer of protection
Dual redundant digital single board exciters utilizing FPGA/DSP technology with automatic changeover

Pre-correction utilized specifically to improve digital performance

Redundant low voltage power supplies

RF Output Power
Maximum: 75 kW RMS

Peak Power: 288kW

Carrier Power Range: Continuously adjustable from 0 to 55 kW in 100 W steps
Up to 62 preset levels, presets may include other operational parameters such as DRM vs Analog and different program inputs

Output level stabilized against AC supply voltage variations
Built in Dynamic Carrier Control

Built in AM stereo

RF Output Connection
3 1/8 EIA female standard, other outputs on request

RF Output Impedance
50 ohms, unbalanced

Efficiency
90% typical at 50 kW

RF Load VSWR
8000 peak reflected watts (1.5:1 VSWR @ 50 kW, 100% modulation) results in instantaneous power shutback

2000 reflected watts RMS (1.5:1 VSWR @ 50 kW, 0% modulation) results in a graceful power reduction

Frequency Range
531 kHz to 1,620 kHz.
"Quick frequency change capability"

Frequency Stability
±2 ppm over temperature range

Optional 300 ppb ovenized source with GPS option

Modulation Type
6 phase direct digital modulation

1.8 MHz modulation sample rate

Modulation Capability
140% positive peak modulation to 50 kW
130% positive peak modulation to 55 kW

Spurious and Harmonic
80 dB or more below carrier at 50 kW

Meets ITU-R SM.328-10
Meets ITU-R SM.329-9

AC INPUT

Voltage
340 V to 510 V, 3 phase or to customer specifications

Power Supply Variation
±10% voltage, 47 Hz to 63 Hz*

Power Consumption
55.5 kW typical at 50 kW, 0% modulation
85 kW typical at 50 kW, 100% modulation

Cos (theta)
0.95 typical

ENVIRONMENTAL

Temperature Range
0°C to + 50°C
Derate 3°C per 500 m above sea level
(2°C per 1,000 ft)

Humidity Range
0% to 95% non-condensing

Altitude
0 m to 4,000 m (0 ft to 13,000 ft)

Cooling Air Requirements
2,550 m^3/hr (1,500 CFM)

SAFETY

Meets EN60215: 1976 Safety Requirements for Radio Transmitting Equipment

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PHYSICAL

Dimensions
184.2 cm H x 95.7 cm W x 120 cm D
(72.4" H x 37.7" W x 47.2" D)

Weight
Main transmitter cabinet with modules installed:
567 kg (1250 lbs)

Power transformer (In transmitter Cabinet):
417 kg (919 lbs)

AUDIO PERFORMANCE

Analog Broadcast Inputs
Dual AES-EBU Digital Audio inputs* adjustable from -30dBFS to 0dBFS for 100% modulation

600 ohms balanced analog audio input +10 dBm nominal for 100% modulation, adjustable from -10 to +12 dBm

Digital Broadcasting Inputs
I,Q over AES-EBU, SRC available* with sample rate converter
I,Q over LVDS, 3 pairs, Clock, Data, frame sync
*Two AES-EBU inputs provided and may be used for either analog audio or digital I,Q inputs
Optional Embedded DRM Generator/Content Server

Optional HD Radio Generator (Exgine™)

Frequency Response
+0.2 dB/-0.8 dB, 30 Hz to 10,000 Hz.

Optional audio input filters available to meet regional bandwidth restrictions

Total Harmonic Distortion
Better than 0.8% (THD), 30 Hz to 10,000 Hz at 95% modulation (typical)

Intermodulation Distortion
SMPTE 1:1 Ratio, 60Hz/7kHz, 95% Mod Peak - 0.5% @ 50kW (typical)
DIM-B, 2.96kHz/9kHz, 80% Mod Peak - 0.5% @ 50kW

Carrier Shift
0.5% or less

Hum and Noise
-65 dB or better below 50kW, 100% modulation

CONTROL AND MONITORING

Extensive Control/Monitoring/Troubleshooting system through 17" front panel LCD touchscreen. Touch panel control system is non-critical and may be removed from the system without affecting transmitter operation or remote control/monitor via direct wired connections. Redundant back-up control interface provides control in case of front panel computer system failure. Built in instrumentation providing detailed spectrum/impedance and modulation analysis.

Metering

Cube
DC Voltages (B+, PA and 15V)
DC Current
Sample Levels (PDM and RF Drive)
Fan Speeds
Heat Sink Temperature

Rack
DC Voltage levels (15V, 5V, 30V, 48V and B+)
Rectifier Fan Speeds
DC Current
Rectifier Heat Sink Temperature
AC Voltage

Exciter
Output Current (RMS, Peak, Carrier)
Output Voltage (RMS, Peak, Carrier)
Forward Power (RMS, Peak, Carrier)
Reflected Power (RMS, Peak, Carrier)
Audio/Modulation Levels (RMS and Peak - Positive/Negative)
Load Impedance

Controller
PDM and RF Drive Levels
Ambient Temp

RF Monitor
RF monitor is a power sample (using a directional coupler) that will allow for accurate audio performance measurements

Status
Easy access to current transmitter operating state, past and present alarm conditions and historical trends of both digital and analog channels

Schedule
Intuitive easy to read built in scheduler

Up to 144 yearly rules can be defined by user

Remote Control/ Monitoring
Three Remote interfaces:

- Direct wired optically isolated inputs and open collector outputs
- Web interface - All locally available control is available over TCP/IP web interface
- SNMP

COMPLIANCE

Product complies with:

- ISED specification BETS-5 issue 1
- FCC CFR title 47 part 2 and part 73
- Conforms with all essential requirements of Radio European Directive 2014/53/EU

Notes:
Specifications defined in a laboratory environment with high grade source and demodulation equipment. Standard factory measurements does not include all items.