Maxiva™ VLX

VHF Band III Liquid-Cooled TV/DAB Transmitter

The Maxiva™ VLX VHF liquid-cooled transmitter (formerly Platinum™ VLX) delivers the newest and most advanced VHF transmission platform with exceptional power efficiency, superior RF performance, and a modular user-friendly design. These capabilities along with the Maxiva VLX's flexible configurations and superior power density provide the critical features upon which broadcasters can build their network.

The Maxiva VLX incorporates the PowerSmart® solid-state architecture with 50 Volt LDMOS amplifier devices and the Maxiva M2X™ exciter technology with RTAC™ to provide today's broadcaster with leading power efficiency and unmatched signal performance. The VLX power amplifiers have a record of proven performance and reliability with GatesAir transmitters and are in use around the world. This powerful blend of technologies provides best-in-class performance with respect to power efficiency, transmitter size and user features. The modular design allows for simpler installation, easier maintenance and reduced total cost of ownership over the life of the transmitters. The VLX is available over a wide range of output power configurations that are suitable for broadcast applications where liquid cooling and space considerations are a premium.

The Maxiva VLX transmitter is capable of multiple modulation schemes for band III VHF analog or digital TV and digital radio operation — including ATSC, ATSC MDTV, DVB-T/H, DVB-T2, ISDB-Tb, DTMB, DAB/DMB and future digital standards. Upgrading from analog to digital or to newer digital standards is readily accomplished to further extend the capability and life of the transmitter.

Product Features

- PowerSmart technology, for best-in-class power efficiency and lowest operating costs
- Rugged, reliable design and construction
- Digital power levels up to 33.6 kW ATSC, 28.8 kW DAB and 19.2 kW
- DVB-T/DVB-T2/ISDB-Tb/DTMB
- Analog power levels up to 48 kW
- Incorporates fieldproven Maxiva M2X exciter technology, allowing easy migration from analog to digital or between different standards
- All-digital linear and nonlinear pre-correction, including exclusive Real-Time Adaptive Correction (RTAC™)
- Fully broadband PA ruggedized modules — 168 to 242 MHz
- 1:1 PA pallet to power supply redundancy
- Hot-pluggable linear RF amplifier modules
- Transmitter monitoring and in-depth diagnostics via easy-to-use, front-panel controls
- Web-enabled remote control graphical user interface

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Product Details

Compact Footprint
As one of the most compact liquid-cooled Band III transmitter, the Maxiva VLX is ideal for crowded, shared transmitter sites. The Maxiva VLX transmitter reduces facility space requirements, simplifies installation, lowers shipping costs and allows for easier maintenance.

Global Monitoring and Control
Maxiva VLX transmitters use a modular transmitter control unit (TCU) housed in the main transmitter cabinet. The TCU communicates with the modules of the exciter and transmitter, as well as with the cabinet level controllers located in additional cabinets. The TCU serves as the central communication point for remote control and monitoring.

A color touch-screen allows easy review of all operational parameters and easy diagnosis of any equipment problems. Front-panel, finger-friendly buttons and bright LED indicators provide straightforward control and feedback on all the key operating parameters. The additional navigation buttons allow for simple review, setup and recall of all menus via the front-panel screen. Simply connect a PC to either the front- or rear-panel RJ-45 connection and you can monitor and control all the settings on a connected PC.

In addition to local control, options allow the Maxiva VLX transmitter to be controlled from anywhere in the world with an intuitive browser-based GUI or SNMP over TCP/IP via a telecom or network connection with password protection.

Improved up Time and reduced Service Costs
Hot-pluggable, redundant power amplifier (PA) and universal power supply (PS) modules make on-air servicing fast and eliminates costly service interruptions. Light-weight universal PA pallets and universal PS modules facilitate overnight/same-day shipping for simple, cost-effective spares holding. With lightweight subassemblies, the Maxiva VLX eliminates two-person lift requirements for routine maintenance and troubleshooting.

Smooth upgradeability
The Maxiva VLX features the world-class Apex M2X software-defined exciter, allowing for a seamless transition from any analog standard to a digital terrestrial standard, or from an existing digital standard to a future standard, such as from DVB-T to DVB-T2 or from ATSC to ATSC MDTV.

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Specifications

Specifications and designs are subject to change without notice

General	
Frequency Range	168 to 242 MHz, in 1 Hz steps
Transmission Standards	ATSC, DVB-T, DVB-T2, ISDB-Tb, DTMB, Analog, DAB
Channel Bandwidth	1.5, 6, 7 or 8 MHz (system dependent)
Rated Power Output	See chart below
Output Power Reduction Range	0 to -10 dB
RF Load Impedance	50 ohms
VSWR	Protected against open or short circuit, all phase angles. Capable of operation into infinite VSWR with user-adjustable fold back threshold. Factory pre-set to 4% of nominal nameplate power (VSWR = 1.5:1)
RF Output Connector	N-female, 1-5/8 or 3-1/8 in. EIA (dependent upon power level, DIN 7-16 optional for lower power levels)
Transmitter Dimensions	Refer to outline drawing 8398464263
Transmitter Weight	Refer to outline drawing 8398464263
AC Mains	
AC Line Voltage	3 phase: 380 to 415 V, or 208 to 240 V, 50/60 Hz - specify when ordering
AC Line Variation	±15%, between 208 to 230 V, or 380 to 400 V
Power Factor	>0.97 (0.98 typical)
Environmental	
Altitude	Up to 13,123 ft (4,000 m) elevation above mean sea level
Ambient Temperature	32° to 113° F (0° to 45° C) at sea level (upper limit derated 3.6° F (2° C) per 984 ft (300 m) elevation AMSL)
Humidity	95%, non-condensing
Cooling Method	Liquid-cooled, using 50/50 mix of ethylene or propylene glycol and water
Acoustic Noise	<65 dBA (measured 1 m (3.3 ft) in front of cabinet)
Frequency Stability	Without precision frequency control/GPS: ±150 Hz/month (6.2 x 10-7ppm)
External Inputs	
GPS Input	SMA female, 50 ohms, (+5 V DC @ 100 mA max output for active antenna)
1 PPS Input	BNC female, user selectable 50 ohms or high impedance termination
10 MHz Reference Frequency	
Input	BNC female, 50 ohms
Monitoring Outputs	
RF Monitor (exciter)	SMA female
1 PPS	BNC female
10 MHz	BNC female

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DVB-T / DVB-T2 / ISDB-Tb / DTMB Specification	
Power Output (average)	800 W to 6.4 kW models available, measured before mask filter (see chart below)
Systems	DVB-T, standard EN 300744 DVB-T2, standard EN 302 755 ISDB-Tb, Brazil ANATEL standard DTMB, GB20600-2006 standard
ASI/T2MI Inputs	2 inputs BNC female; 75 ohms according to EN 50083-9 (2 main/2 hierarchical)
Crest Factor	13 dB maximum
Shoulder Level	<37 dB (before mask filter)
END	<0.5 dB
MER	>33 dB (typical 35 dB)
Harmonics (before filter)	<-40 dB
Central Carrier Suppression	>75 dB
DVB-T2 Modes	Supports multiple PLP's, MISO, extended bandwidth mode, PAPR reduction
DAB / DMB Specification	
Power Output (average)	1.2 kW to 9.6 kW models available, measured before mask filter (see chart below)
Systems	DAB/DMB (OFDM) ETSI EN 300 401 & ETSI TR101 496-1
Power Stability	≤ ±0.25 dB
Harmonic/Spurious Output	Complies with EN 302077-2 when used in conjunction with proper band pass filter
Shoulder Before Filter	35 dB minimum, >36 to 40 dB typical
MER	>25 dB
Signal Inputs	ETI Input: BNC-female, user selectable 75 ohms or high impedance termination. 2x ETI (NI, G703) or 2x ETI (NA, G704), seamless input signal switch-over automatic optional EDI Input: 10/100 Base T RJ45, per ETSI TS 102 693 V1.1.2, 1 channel, UDP/DCP or TCP/DCP protocol
Monitoring Outputs	ETI Monitor 2.048 MHz Sync ETI Sync OFDM
ATSC Specification	
Power Output (average)	1.4 kW to 11.2 kW models available, measured before mask filter (see chart below)
System	ATSC A-53, 8-VSB DTV standard
Data Input	19.39 Mb/s, configurable as SMPTE-310M or ASI (user selectable)
Impedance	75 ohms, unbalanced
Input Connector	2 inputs, BNC female
Signal to Noise (EVM)	>27 dB (EVM < 4%), Typical >32 dB (EVM <2.5 %)
Phase Noise	<104 dBc/Hz @ 20 kHz offset (ATSC A/64)
Harmonic Radiation and Spurious	Meets mask requirements specified in FCC 5th and 6th report and order
Sideband Performance	Compliant with FCC radiation mask, when measured at the output of GatesAir-supplied output filter

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Analog	
Power Output (vision peak of sync)	2.0 kW to 16 kW models available, measured before IMD filter (see chart below). 10% Sound
Analog Television Systems	CCIR G, I, K, K1, M, N
Color Systems	PAL, NTSC, SECAM
Sound Systems	Monaural, BTSC, IRT, NICAM G
Analog Video Performance	
Video Input	0.7 to 1.4 V, 75 ohms, 32 dB return loss
Variation of Output Power[2]	±2%
Vision Sideband Response[3]	PAL system G shown (other systems available) -1.25 MHz and below -20 dB or less -4.43 MHz -30 dB or less -0.75 to -1.25 MHz 0.5 dB or less -0.5 to 4.5 MHz 0.5 to -0.5 dB 5.0 MHz 0.5 to -2.5 dB 5.75 MHz and above -35 dB or less
Differential Gain[5]	3%
Differential Phase[5]	3°
Low Frequency Linearity[6]	10%
Incidental Carrier Phase Modulation[5]	±2°
Signal to Noise Ratio	>60 dB (weighted)
K Factor	2% or less with 2T sin2 pulse
20T Equivalent Gain and Delay	3% total baseline distortion
Spurious and Harmonic Radiation	-60 dB, or better
In-Channel Intermodulation Distortion	-58 dB (-60 dB typical)
Analog Sound Performance	
Modulation Capability	±120 kHz peak deviation
Monaural Input	Adjustable 0 to 12 dBm, 600 ohms, balanced, >30 dB return loss
Pre-emphasis	Selectable 75 or 50 µS
Frequency Response	±0.5 dB, 40 Hz to 15 kHz
Harmonic Distortion	0.5%, 30 Hz to 15 kHz
FM Noise	60 dB RMS with de-emphasis
AM Noise	50 dB RMS from 30 Hz to 15 kHz
Synchronous AM Noise	40 dB RMS at 400 Hz with ±25 kHz deviation
IRT Sound	Available
NICAM Sound	Available

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Remote Control	
Parallel Remote	12 conductor terminal block (mini Wago)
Ethernet/SNMP	RJ-45, twisted pair
Compliance	RoHS 2002/95/EC R&TTE 1999/5/EC Safety: EN 60215 EMC: EN 301-489-1 FCC Part 73 Manufacturing: ISO 9001: 2008
1 Variation of peak output power with a change in average picture level from black to white (0% to 100%).	
2 Peak-to-peak variation of peak sync voltage during one field using field test signal per EIA-508.	
3 Response specified for transmitter operating into a resistive load of 1.05:1 VSWR.	
4 Measured using 20% peak-to-peak amplitude swept video modulation with pedestal set at 10%, 50% and 90% APL. All percentages relative to a blanking to white transition.	
5 Measured using a 5-step staircase signal. Test signal #3, CCIR REC. #421-3.	

VLX Power Levels

Model Number	Number of Cabinets	Number of PA Modules	RF Output Power (W) Pre-Filter
VLX-2000AN	1	2	2,000/200
VLX-1200DA			1,200
VLX-1400AT			1,400
VLX-800DV/T2/IS			800
VLX-4000AN	1	4	4,000/400
VLX-2400DA			2,400
VLX-2800AT			2,800
VLX-1600DV/T2/IS			1,600
VLX-6000AN	1	6	6,000/800
VLX-3600DA			3,600
VLX-4200AT			4,200
VLX-2400DV/T2/IS			2,400
VLX-8000AN	1	8	8,000/800
VLX-4800DA			4,800
VLX-5600AT			5,600
VLX-3200DV/T2/IS			3,200
VLX-12000AN	1	12	12,000/1,200
VLX-7200DA			7,200
VLX-8400AT			8,400
VLX-4800DV/T2/IS			4,800
VLX-16000AN	1	16	16,000/1,600
VLX-9600DA			9,600
VLX-11200AT			11,200
VLX-6400DV/T2/IS			6,400
VLX-32000AN	2	32	32,000/3,200
VLX-19200DA			19,200
VLX-22400AT			22,400
VLX-12800DV/T2/IS			12,800

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VLX Power Levels (continued)

VLX-48000AN	3	48	48,000/4,800
VLX-28800DA			28,800
VLX-33600AT			33,600
VLX-19200DV/T2/IS			19,200

Modulations

- AN – Analog
- AT – ATSC
- DV – DVB-T
- T2 – DVB-T2
- IS – ISDB-Tb
- CT – DTMB

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