



Rack-Mount Analog FM Tx

VX Series

Agenda

- Building on the VS legacy
- Opportunity
- Meet the VX Series
- Tech Tour
- Q & A



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Sales Manager -
Central USA



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Product Manager



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Engineering
Technologist

Building on the VS Series Legacy

VS Series



- Introduced in 2010
- A departure from typical basic low power transmitters of the day
 - Big transmitter features in an affordable unit
 - Advanced control and monitoring
 - Direct-to-digital exciter in 300 W, 1 kW, & 2.5 kW models
 - Integrated functionality such as Orban Audio Processing
- Broadcaster confidence shown with over **7000** deployed worldwide

A Decade Later...

Nautel has been able to:

- Leverage new technology into engineering opportunity
- Employ the latest modeling and design tools
- Address customer requests/refinements
- Create a new family of *even more* capable analog, low power, FM transmitters

Improved Packaging

Updated Control & UI

New RF FETs

Higher Efficiency

New Power Supplies

Quieter

Easier Maintenance

More Powerful DSP

More Affordable

VX Series

150 W to 6 kW FM
Analog Transmitters



The new VX Series...
Compact, Efficient, Affordable

NEW VX Series:

Easy Service

Power Chain

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design

Ground-up new design



NEW VX Series: Technology tour

Easy Service

Power Chain

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design

Clean accessible layout



NEW VX Series: Technology tour

Easy Service

Power Chain

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design



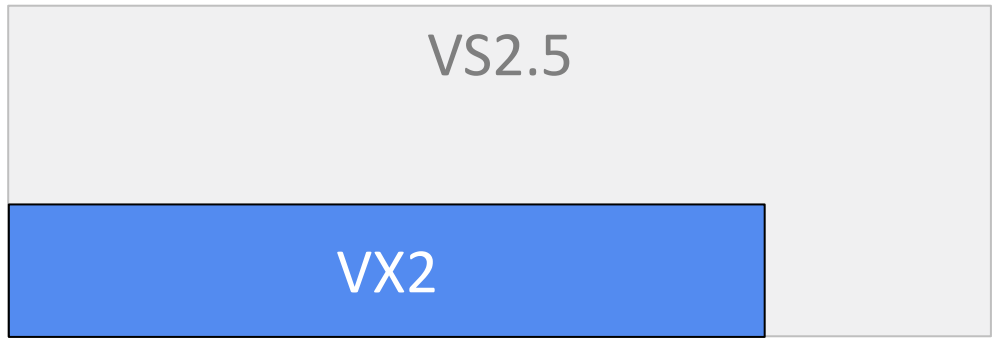
NEW VX Series: Technology tour

- Easy Service
- Power Chain
- Modern Exciter
- Advanced RF
- Control & UI
- More Affordable
- Long-Life Design

Weight



Volume



NEW VX Series: Technology tour

Easy Service

Power Chain

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design



Variable voltage PS
Efficiency implications

Titanium grade
power supply
96% efficiency

Fingertip access

NEW VX Series: Technology tour

Easy Service

Power Chain

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design

Optional Orban Inside audio processing

Design headroom: dual core signal processor

Separate analog audio card

Direct-to-digital exciter for outstanding RF purity



NEW VX Series: Technology tour

Easy Service

Power Chain

Modern Exciter

Advanced RF

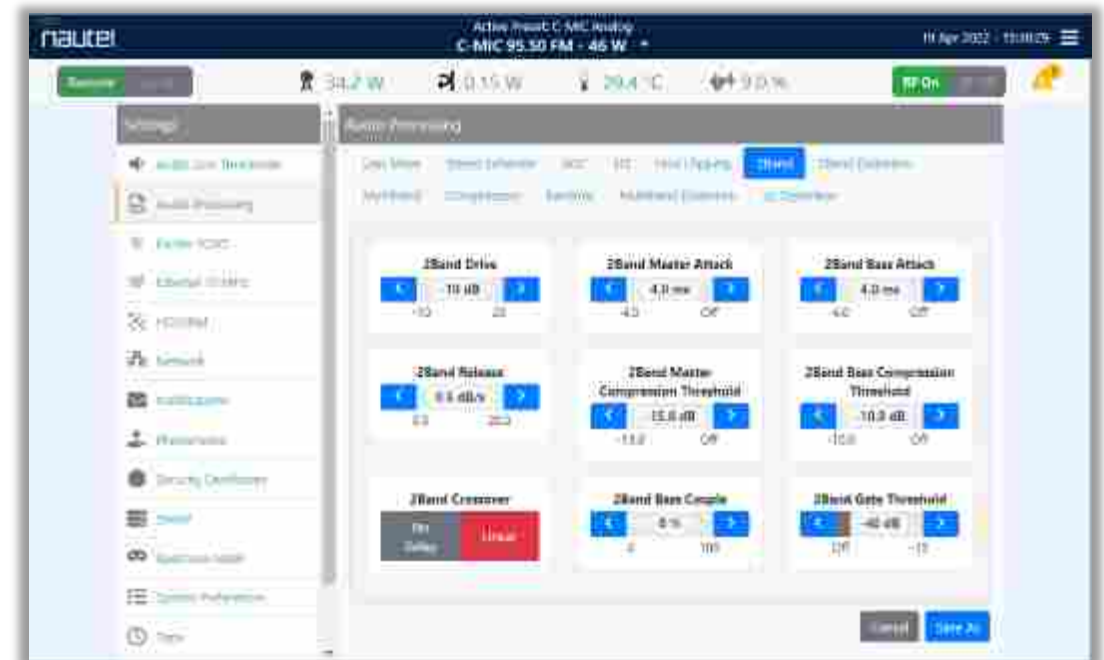
Control & UI

More Affordable

Long-Life Design

Orban Inside

- Optional DSP card mounts inside any VX transmitter
- Based on Orban 5500 5-band / 2-band processor software
- Monitor and control via AUI
- Works with:
 - L & R, AES/EBU
 - USB player inputs
- AES/EBU in/out
 - Uses VX stereo generator
 - Savings \$ relative to standalone processors



NEW VX Series Technology tour

Easy Service

Power Chain

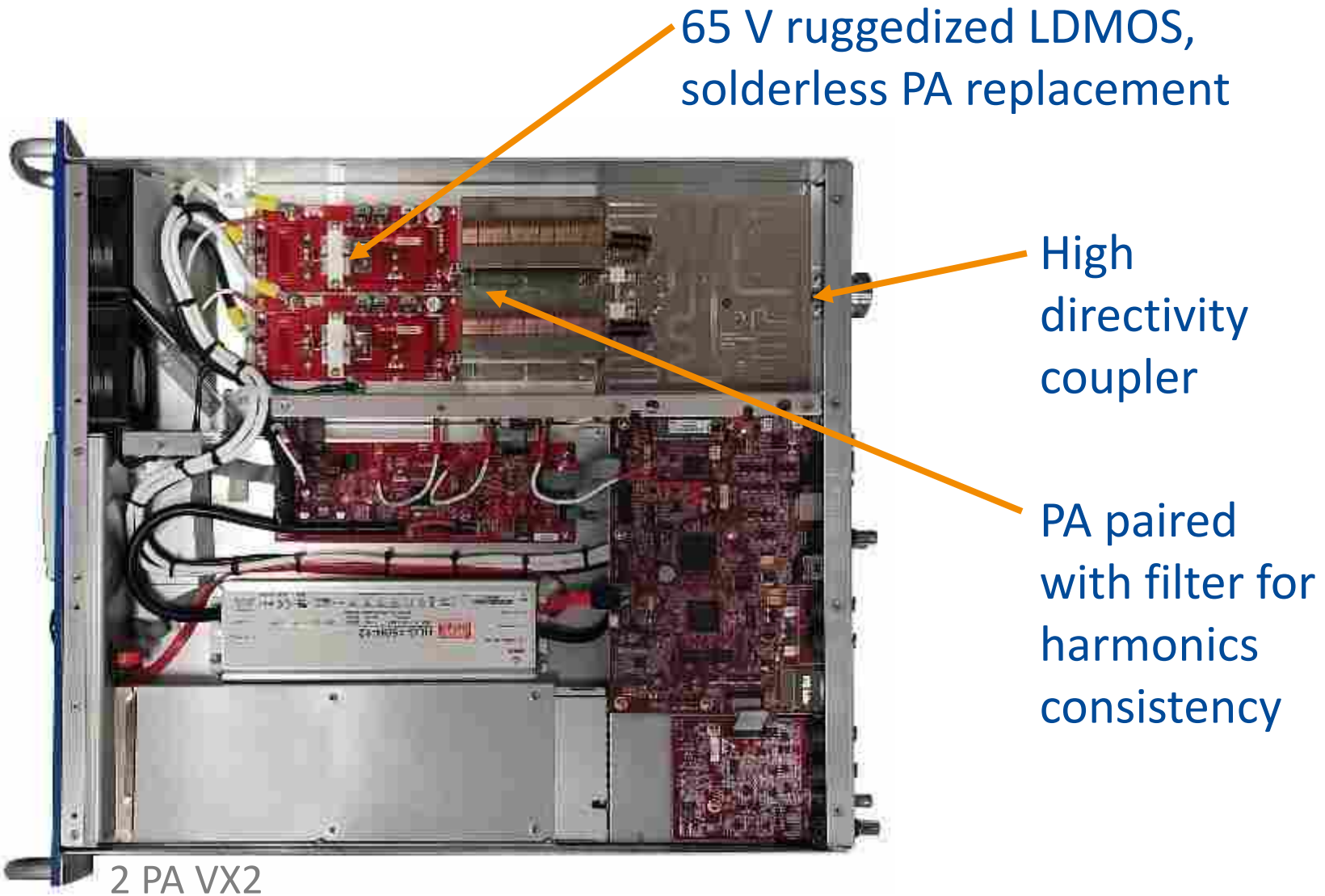
Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design



65 V ruggedized LDMOS, solderless PA replacement

High directivity coupler

PA paired with filter for harmonics consistency

2 PA VX2

NEW VX Series Technology tour

Easy Service

Power Chain

Modern Exciter

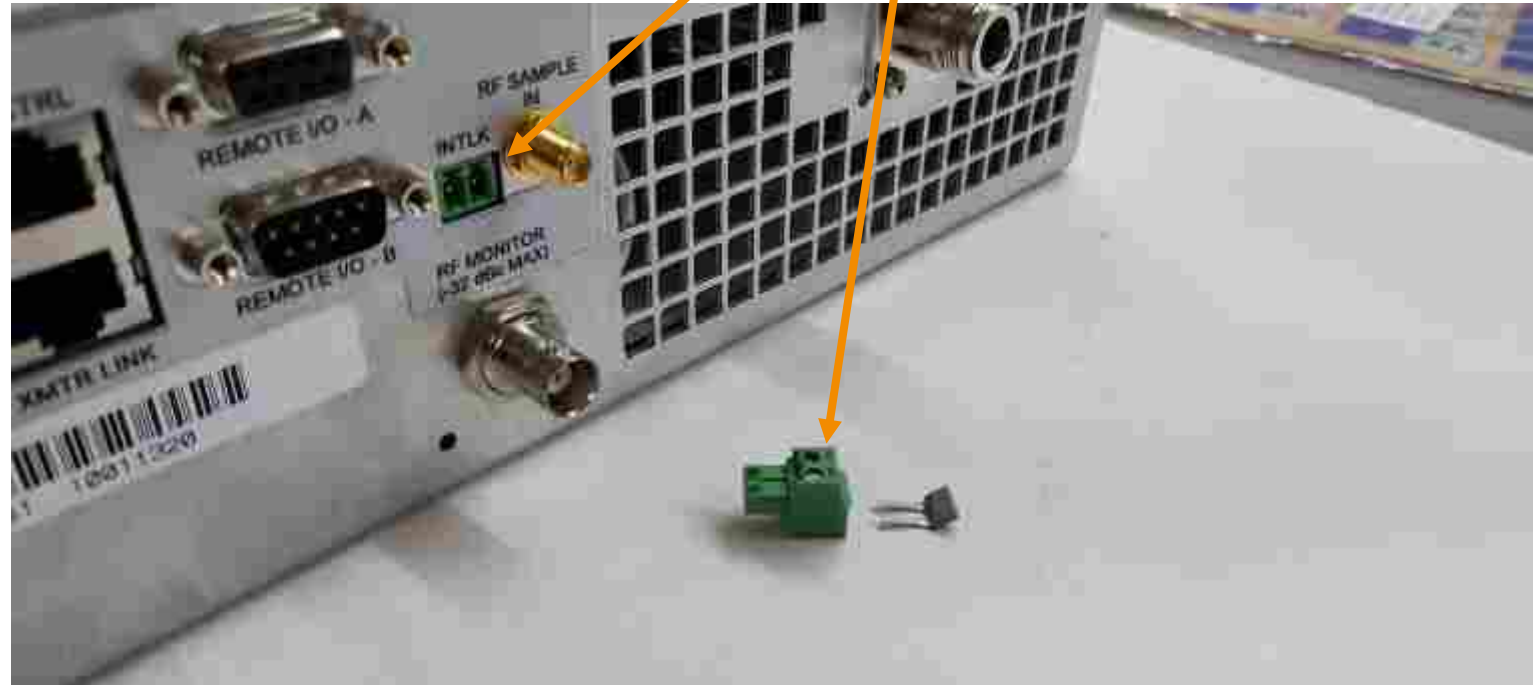
Advanced RF

Control & UI

More Affordable

Long-Life Design

Solderless
dedicated
interlock



NEW VX Series: Technology tour

Easy Service

Power Chain

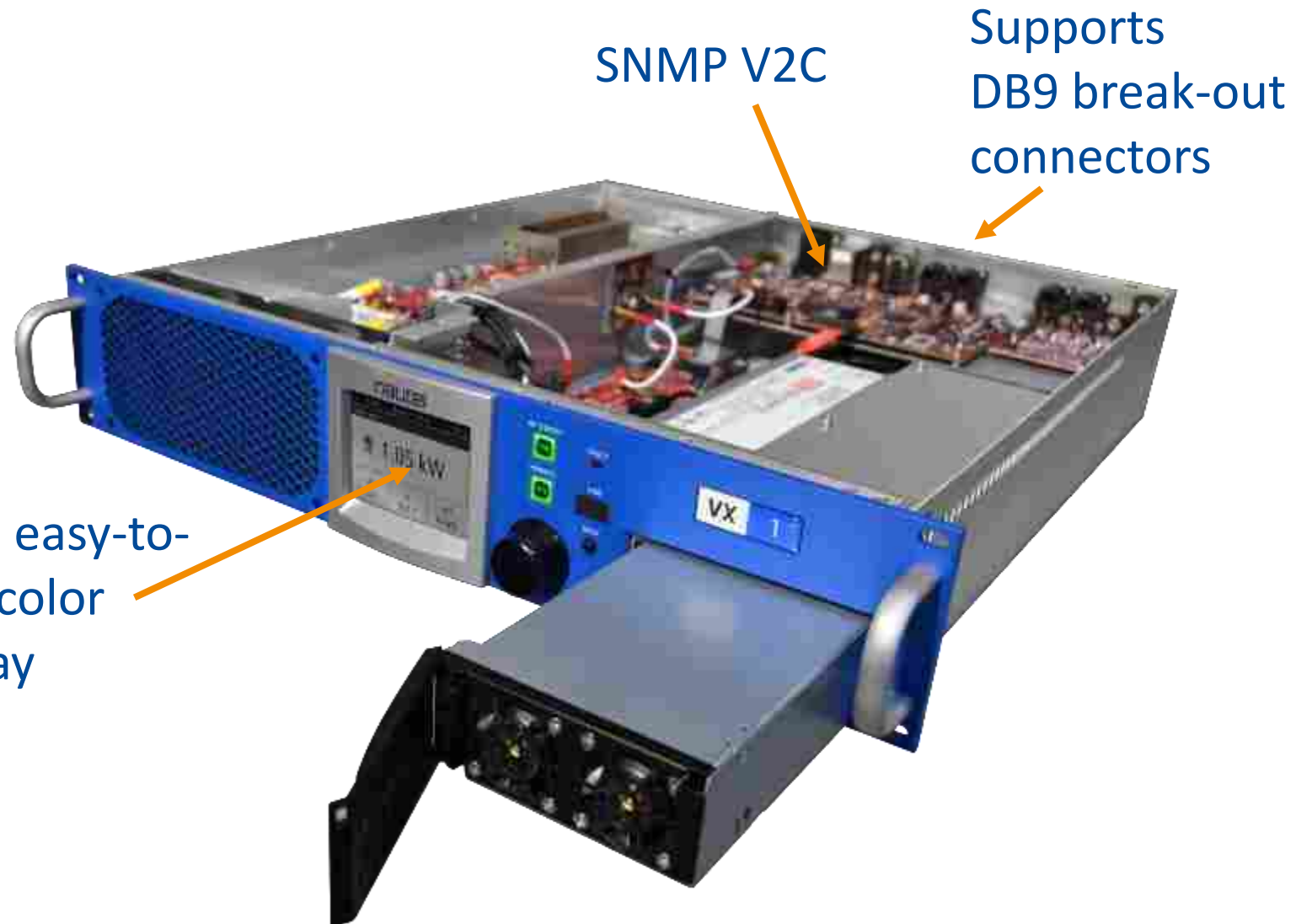
Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design



NEW VX Series: Technology tour

Easy Service

Efficient Power

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design



NEW VX Series: Technology tour

Easy Service

Efficient Power

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design



NEW VX Series: Technology tour

Easy Service

Efficient Power

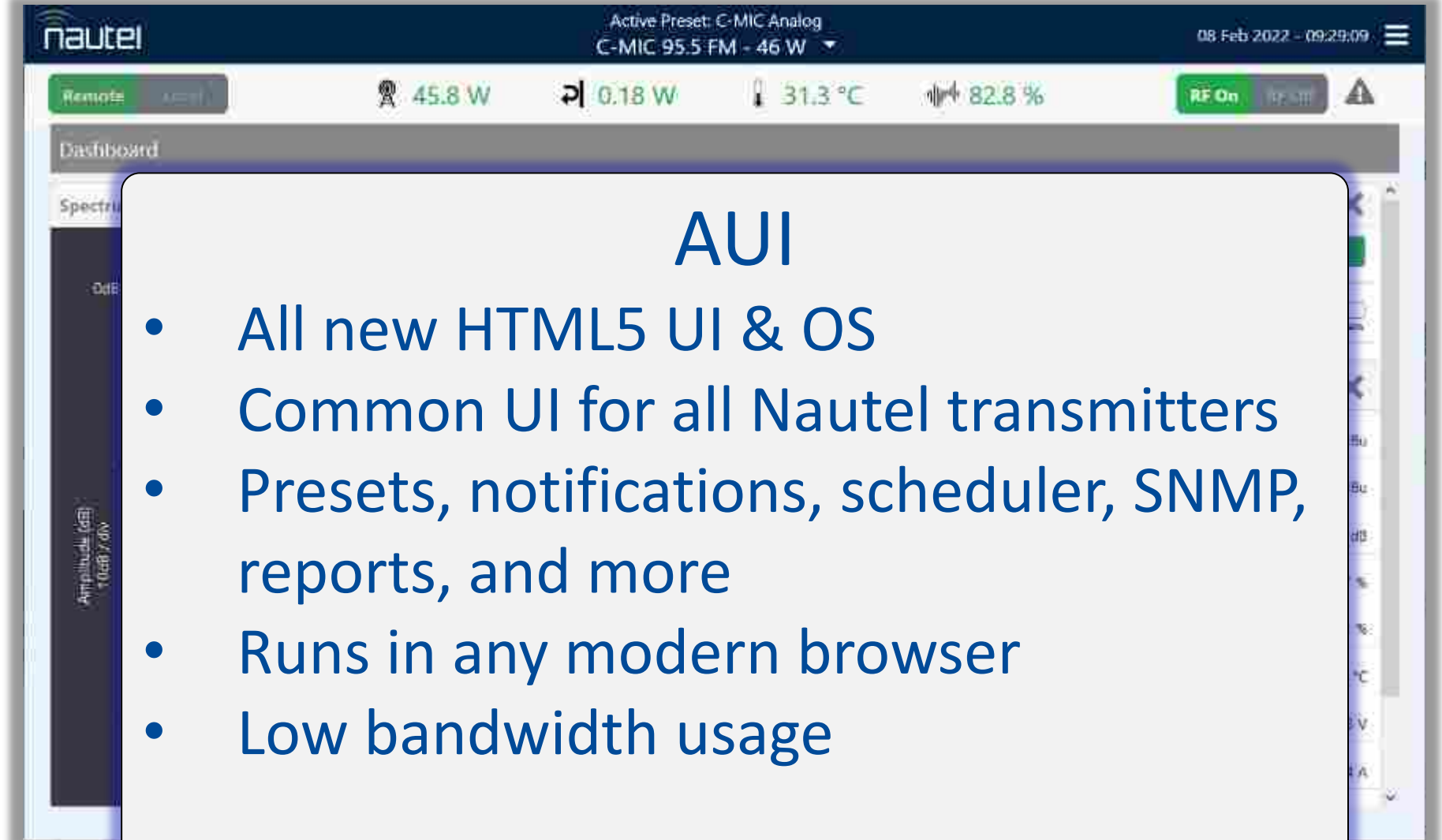
Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design



The screenshot displays the Nautel transmitter control interface. At the top, it shows the Nautel logo, the active preset 'C-MIC Analog', and the current frequency 'C-MIC 95.5 FM - 46 W'. The date and time are '08 Feb 2022 - 09:29:09'. Below this, there are several status indicators: 'Remote' (OFF), '45.8 W' (Power), '0.18 W' (Power), '31.3 °C' (Temperature), and '82.8 %' (Efficiency). A green 'RF On' button is visible on the right. The main content area is titled 'Dashboard' and 'Spectri'. A central white box with a blue border contains the text 'AUI' and a list of features:

- All new HTML5 UI & OS
- Common UI for all Nautel transmitters
- Presets, notifications, scheduler, SNMP, reports, and more
- Runs in any modern browser
- Low bandwidth usage

NEW VX Series: Technology tour

Easy Service

Efficient Power

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design

OPTION: SC4 controller



- Pre-configured
- Main/Standby & N+1
- SNMP-based

NEW VX Series: Technology tour

Easy Service

Efficient Power

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design

VS Series



NEW VX Series: Technology tour

Easy Service

Efficient Power

Modern Exciter

Advanced RF

Control & UI

More Affordable

Long-Life Design

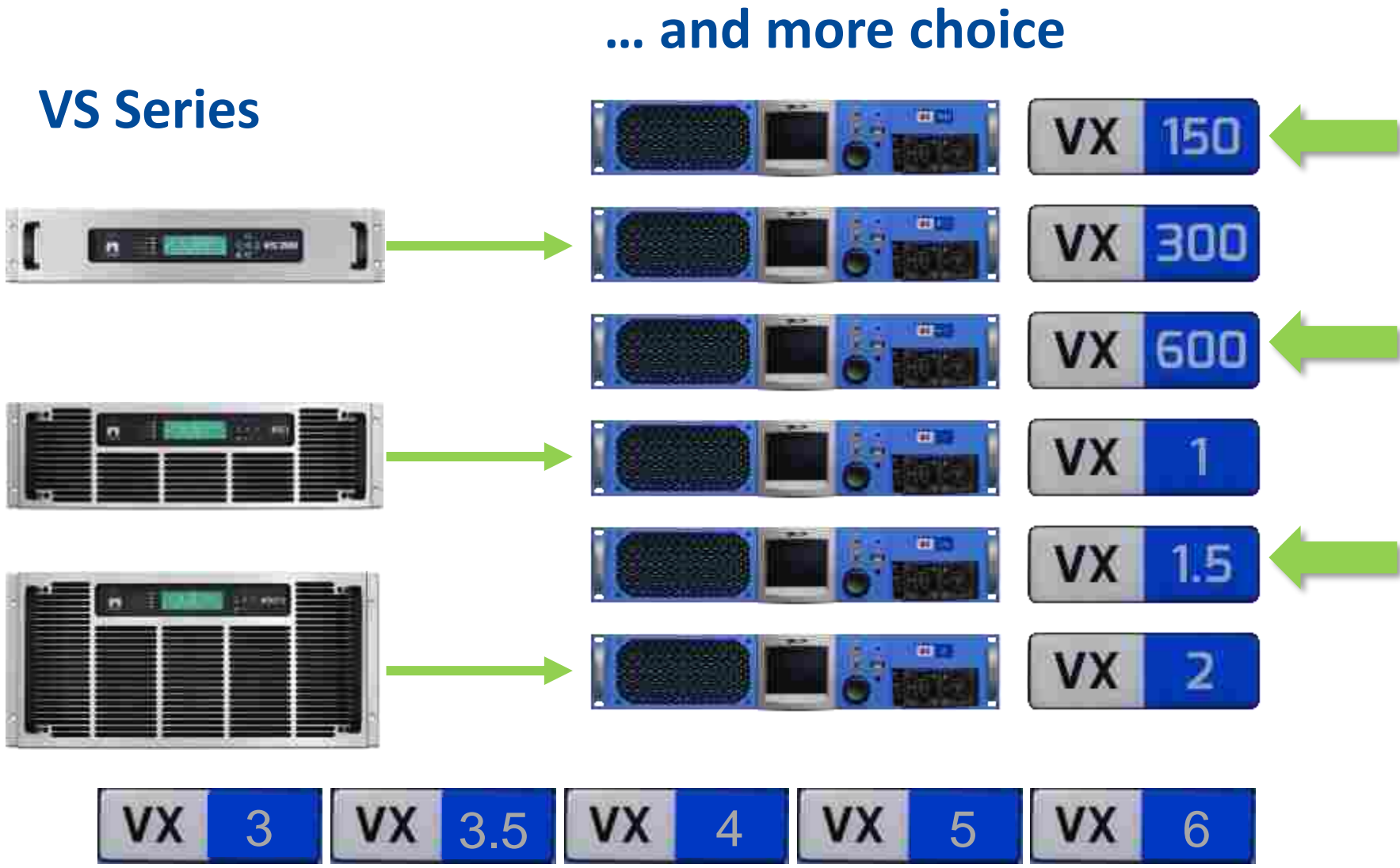
VS Series

Improved Affordability



NEW VX Series: Technology tour

- Easy Service
- Efficient Power
- Modern Exciter
- Advanced RF
- Control & UI
- More Affordable**
- Long-Life Design



The right TPO to meet your needs

making digital broadcasting work

NEW VX Series: Technology tour

Easy Service

Efficient Power

Modern Exciter

Advanced RF

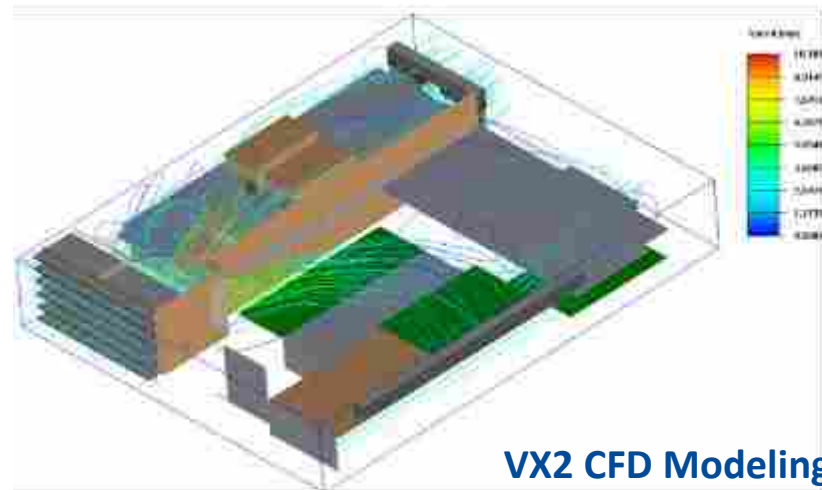
Control & UI

Affordable

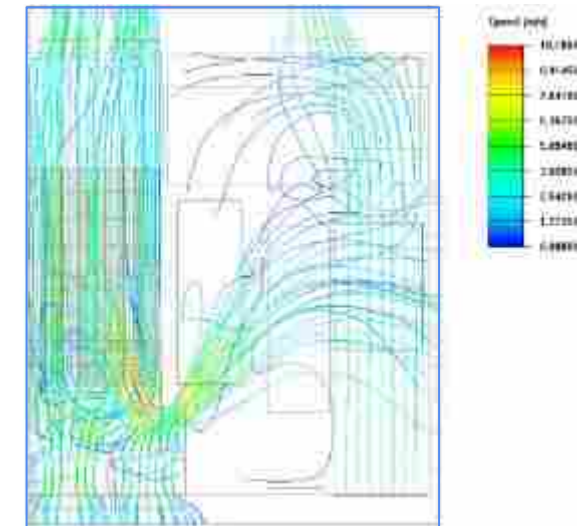
Long-Life Design

Rigorous design & device selection:

- Exhaustive thermal design:
 - Cool air over fans extends bearing life
 - Utilize variable speed, long-service-life fans
- 250 million hour FET MTTF (electromigration)



VX2 CFD Modeling



NEW VX Series: Technology tour

Easy Service

Efficient Power

Modern Exciter

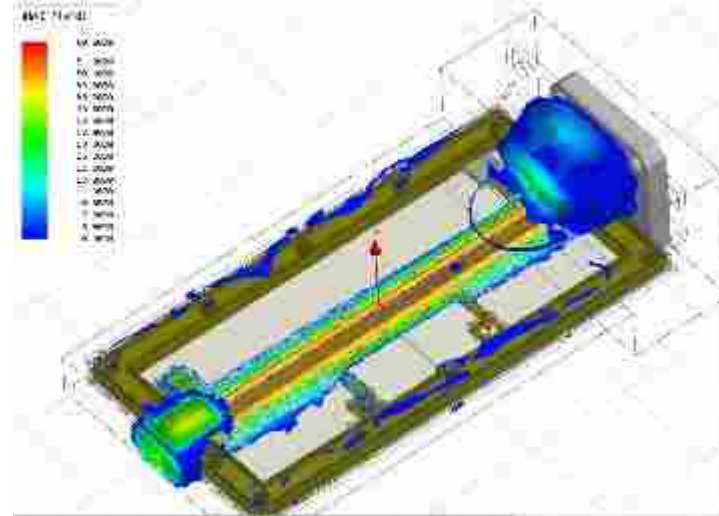
Advanced RF

Control & UI

Affordable

Long-Life Design

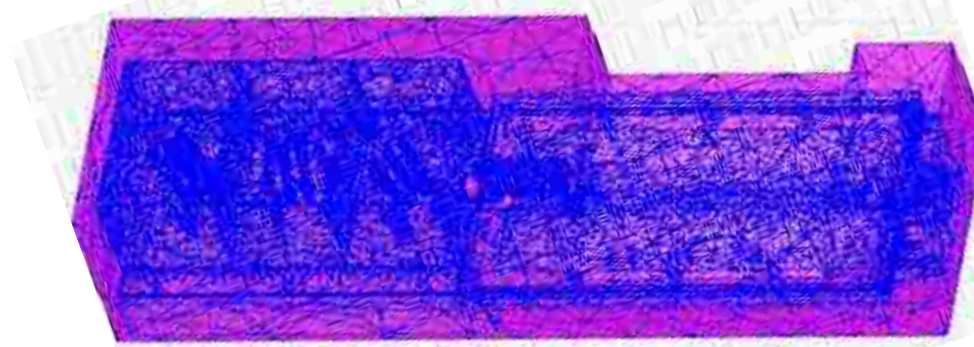
Extensive Electromagnetic Modeling:



Directional Coupler EM Modeling



VX2 Combiner
EM Modeling



NEW VX Series Technology tour

Easy Service

Efficient Power

Modern Exciter

Advanced RF

Control & UI

Affordable

Long-Life Design

- Nautel's conservative design approaches
- Exhaustive thermal modeling
- Extensive electromagnetic analysis
- North American Design, Build, & Support

All contribute to long service life for a transmitter that lasts years longer ensuring a low cost of ownership

NEW VX Series: Performance



Fully digital exciter and digital stereo generator

- **S/N Ratio:** Mono / Composite: 90 dB; Stereo: 80 dB
- **Frequency Response:**
 - Composite: ± 0.05 dB, 20 Hz to 53 kHz
 - Stereo/Mono: ± 0.1 dB, 30 Hz to 15 kHz
- **THD: Mono/Composite:** 0.005% or less; Stereo: 0.025% or less
- **Stereo Crosstalk:** 60 dB below 100% (30 Hz to 15 kHz)
- **IMD:** CCIF: 0.008% or less, SMPTE: 0.025% or less
- **DIM:** 0.05% or less (2.96 kHz square wave / 14 kHz sine wave)

NEW VX Series: Rich selection of audio inputs



Audio Sources	2 x AES (incl. MPX over AES)
	Analog L/R
	2 x MPX/SCA (suitable for composite, RDS, or SCA)
Audio Backup	Automatic changeover to backup audio source in the event that main audio source fails

NEW VX Series: 150 W – 2 kW Power Summary

GENERAL	VX150	VX300	VX600	VX1	VX1.5	VX2
Rated Output Power	150 W	300 W	600 W	1000 W	1500 W	2000 W
Output Power Range	15-165 W	30-330 W	60-660 W	100-1100 W	150-1650 W	200-2100 W
Power Amplifier	1	1	1	1	2	2

AC INPUT	VX150	VX300	VX600	VX1	VX1.5	VX2
Voltage	90-265 VAC, 1PH, 47-66 Hz				185-265 VAC, 1PH, 47-66 Hz	
Power Consumption at Rated Output Power	286 W (295 VA) Typical	465 W (470 VA) Typical	811 W (819 VA) Typical	1322 W (1349 VA) Typical	2046 W (2067 VA) Typical	2650 W (2677 VA) Typical
Typical Efficiency	51%	65%	74%	75%	73%	75%

RF Output Connector	Type "N", female	7/16 DIN, female
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Specs: www.nautel.com/products/fm-transmitters/vx-series/

VX 3 – 6 kW

Separate Exciter/Controller

- Low weight
 - Exciter/Controller: 15 lb
 - Power Section:
 - 65 lb with power supplies
 - 50 lb without power supplies
- Easy access serviceability
 - Fingertip access power supplies
 - Quick RF pallet access
 - Front-access washable filters
 - Solderless PA Pallets



NEW VX Series: 3 kW – 6 kW Power Summary

GENERAL	VX3	VX3.5	VX4	VX5	VX6
Rated Output Power	3 kW	3.5 kW	4 kW	5 kW	6 kW
Output Power Range	300-3300 W	350-3850 W	400-4400 W	500-5500 W	600-6300 W
Power Amplifier	6	6	6	6	6
Voltage	185-265 VAC (Nom 208/220/240 VAC) 1PH 47-63 Hz (Line-Line & Line-Neutral) (2 wire plus GND) 185-265 VAC (Nom 208 VAC) 3PH 47-63 Hz (Line-Line & Line-Neutral) Wye or Delta (3 or 4 wire plus GND) 320-460 VAC (Nom 380 VAC) 3PH 47-63 Hz (Line-Line) Wye (4 wire plus GND)				
Power Consumption at Rated Output Power	4307 VA Typical	4886 VA Typical	5507 VA Typical	6700 VA Typical	8040 VA Typical
Typical efficiency	70%	72%	73%	75%	75%
RF Connector	1-5/8" EIA with removable field flange (Optional 7/8" adapter)				

Specs: www.nautel.com/products/fm-transmitters/vx-series/

Putting the VX Series to work:

- Main transmitter
- Back-up transmitter
- LPFM (150 W, 300 W)
- Exciter replacement
- Translator
- SFN
- Portable emergency transmitter



NEW VX Series: Summary

- More TPO choice 11 models 150 W – 6 kW
- Large, easy-to-view, color display
- Easy Serviceability: FETS, Fans, Filters
- Optional Orban-Inside audio processing
- AUI: Powerful, Secure, HTML Tx Control
- Instrumentation, RDS, SNMP, Presets
- Fingertip-access power supplies
- State-of-the-art high voltage FET
- Direct-to-digital exciter, outstanding RF purity
- Industry-standard Titanium power supplies
- Clean simple, long service-life design
- High AC-RF efficiency

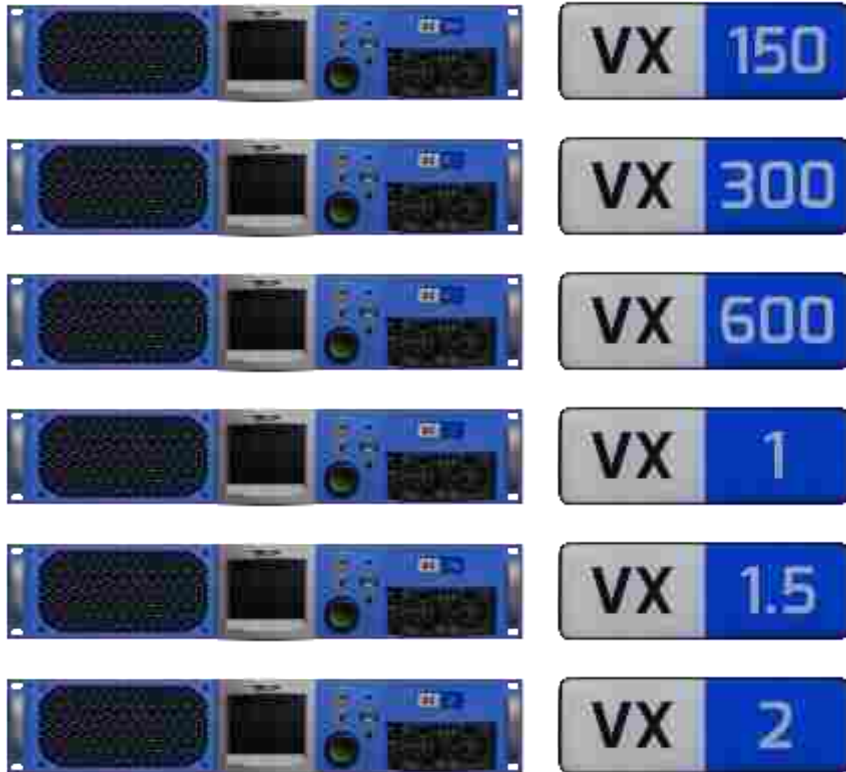
- Availability:
 - 150 W – 2 kW: Available now
 - 3 kW – 6 kW: First half 2023



- 100% North American Design and Build
- #1 Support
- Rigorous testing and quality assurance
- 4-year warranty

11 NEW VX models!

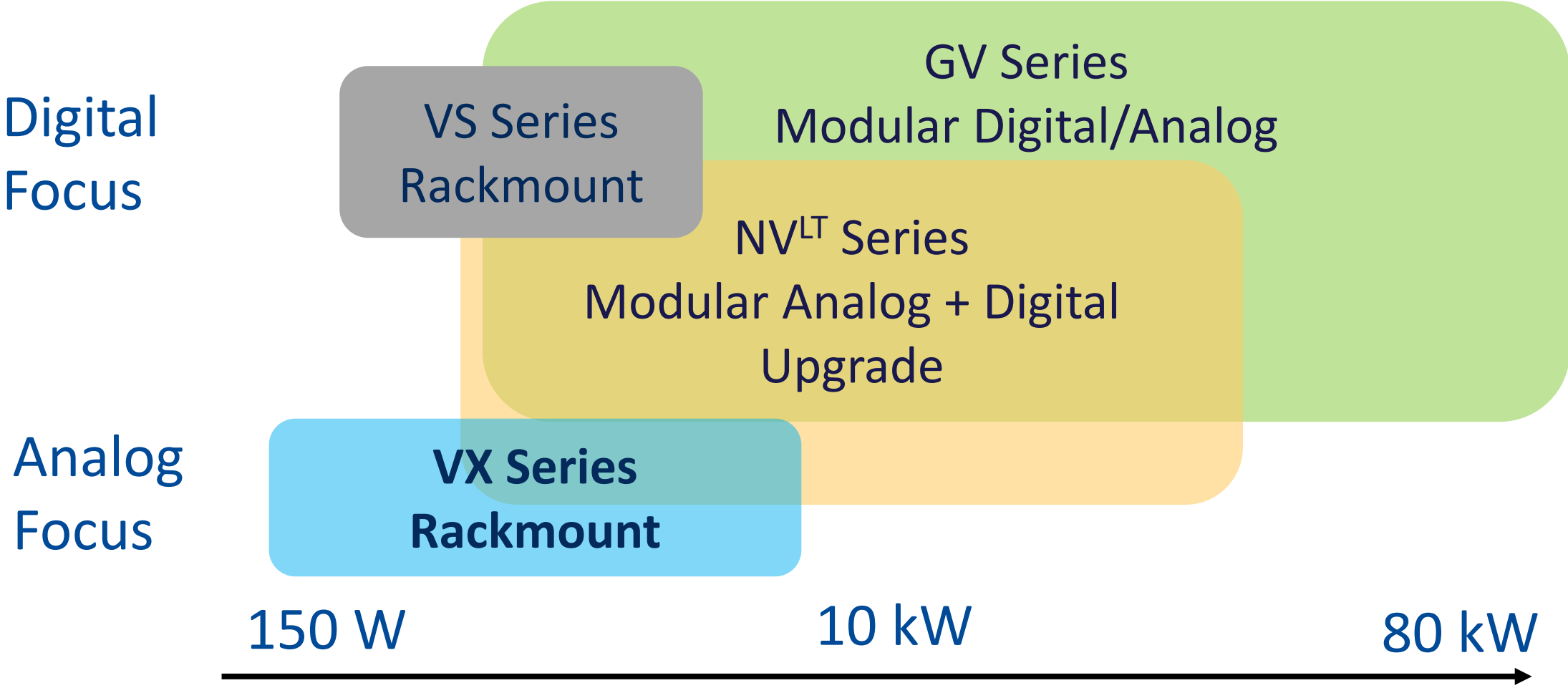
More Choice



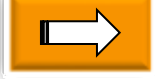
The right TPO to meet your needs

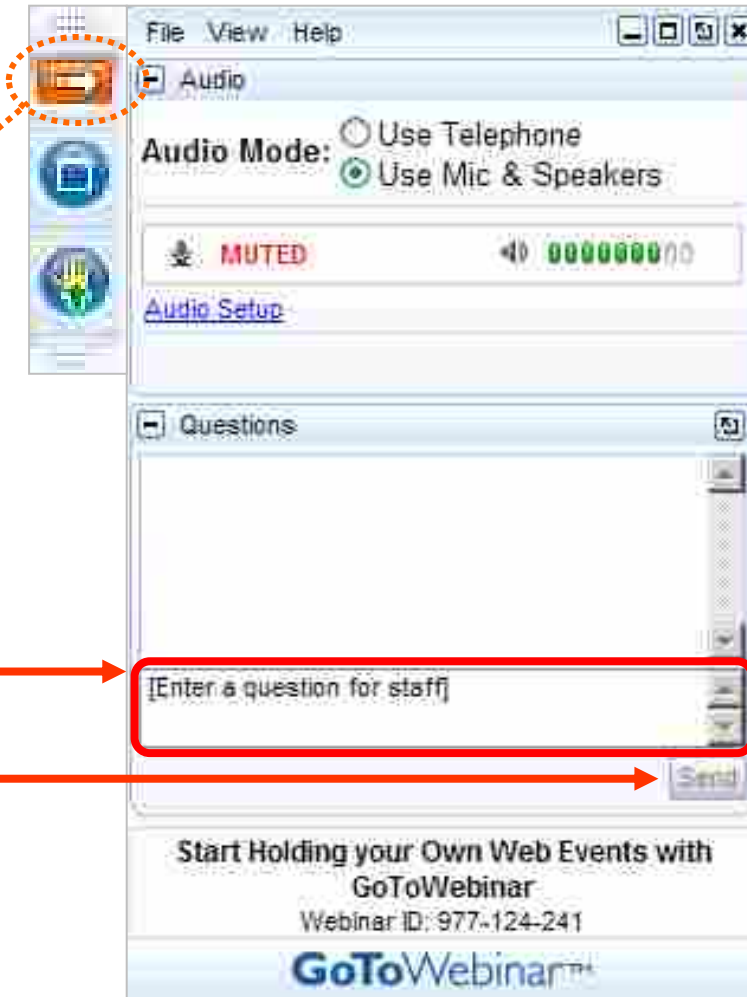
making digital broadcasting work

Nautel FM Transmitter Families



Q & A

Click on  to open/close webinar panel



Enter questions here
*...then press **Send***

NAB 2023

NABSHOW™
Where Content Comes to Life™

Booth
W2843

NUG@NAB
Radio Technology Forum

8:30 am – 12:00 pm
Sunday, April 16
Flamingo Las Vegas

EVENTS

- **NUG@NAB**
Radio Technology Forum
- **AUI session**
- **HD session**
- **Booth W2843**
- ***Cake!***

PRODUCTS

- **VX Series**
- **GV + HD Air Chain**
- **AUI**
- **NX**
- **NVLT**
- **SC4**

FREE Exhibit Pass Code: LV7673 (Expires 31st Mar)

Online Information

- **Nautel Waves Newsletter**

<https://www.nautel.com/newsletter/>

Webinars

<https://www.nautel.com/webinars/>

YouTube

<https://www.youtube.com/user/NautelLtd>

- **VX Series Product Page**

<https://www.nautel.com/vx-launch/>

Thank You!

www.nautel.com

