FLEXIBLE LOW-POWER TV TRANSMISSION SYSTEMS

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FLEXIBLE LOW-POWER TV TRANSMISSION SYSTEMS

Todays Virtual Event Covers:

- New and cutting-edge solutions for the unique demands of low-power TV transmission. Learn about compact highly efficient and cost-effective systems that feature simple modular construction that delivers the lowest total cost of ownership. Key features such as intuitive HTML-5 GUIs, network security, integrated Off-Air & Satellite receivers and IP-based content distribution options.

Future Virtual Events (not covered in detail today):

- Outdoor and Desktop Transmitters and Applications
- Total Cost of Ownership - The Economics of Deploying High-Efficiency Transmitters
GATESAIR IN USA + ITALY

United to Create One Company

• GatesAir USA had a long-term relationship partnering with Onetastic Italy for low power products for over 5 years.

• Italy has some of the finest RF engineers in the World.

• Top-notch support from all major component suppliers.

• Onetastic customers very enthusiastic regarding product quality and design and GA ownership.

• Engineering from both sides are now integrated - The best technology from Europe is being combined with the best technology from the USA.
MANUFACTURING LOCATIONS

QUINCY, IL USA

BRESCIA, LOMBARDY, ITALY
GATESAIR LPTV (LOW POWER TV) PRODUCTS

GatesAir USA – Quincy, IL

- Digital TV ✓
- Analog TV ×
- Translators / SFN GF ×
- Supports ATSC 3.0 ✓
- Liquid-Cooled UHF ✓
- Liquid-Cooled VHF ×

Maxiva™ UAXT / VAXT

- Maxiva™ Air-Cooled UAXTE (UHF)
- Maxiva™ Liquid-Cooled ULXTE (UHF)

1.2kW to 19.2kW
1.4kW to 93kW

Up to 600W

GatesAir S.r.l. - Brescia (Italy)

- Digital TV ✓
- Analog TV ✓
- Translators / SFN GF ✓
- Supports ATSC 3.0 (In dev.) ✓
- Liquid-Cooled UHF ✓
- Liquid-Cooled VHF ✓

Multi-Compact

- Up to 8 x 15W
- Up to 200W

Ultra-Compact

- Up to 150W
- Up to 400W
- Up to 700W

UAX/VAX OP Series

- Up to 150W
- Up to 400W
- Up to 700W
- Up to 2,000W

ULX/VLX-OP Series

- Up to 7kW
- Up to 44kW
SPECIALTY LOW POWER TV PRODUCTS (PREVIEW)

- IMTX-70 DESKTOP TX
  - Lightweight and portable
  - 230 x 485 x 320mm (9.1” x 19.1” x 12.6”)
  - Up to 6 separate transmitter modules
  - Output power: 70W rms per module (Pre-Filter)

- PMTX-1 OUTDOOR TX
  - Outdoor weatherproof design
  - Flexible mounting (pole, wall, etc.)
  - Self-contained with mask filter
  - 50W post-filter power

For more on both products – Virtual Event on 4/29
GATESAIR LPTV (LOW POWER TV) PRODUCTS

**UHF**
- Ch 14 - 51
- 20W, 40W, 70W, 130W, 150W
- 2RU Maxiva™ UAXT Ultra-Compact
- 3 RU Maxiva™ UAX-OP Series

**VHF High**
- Ch 7 - 13
- 120W, 150W
- 350W, 450W
- 700W, 900W
- 1RU Maxiva™ VAXT Ultra-Compact
- 3 RU Maxiva™ VAX-OP Series

**VHF Low**
- Ch 2 - 6
- 70W
- 300W
- 400W
- 1RU Maxiva™ VAXT-L Ultra-Compact
- 3 RU 1 + 3.5 RU

1100W, 1800W
1 RU Models – All can be configured as Transmitters or Transposers/On-Channel Gap Fillers

UHF digital power levels shown
(VHF also available)

- (Doherty) 150 W
- (Doherty) 130 W
- (Doherty) 80 W
- 50 W
- 30 W
- 15 W

- OFDM TV
- ATSC-1 TV
1RU ULTRA-COMPACT

- Available output power: 15W to 150W average power
- High-efficiency, broadband UHF & VHF
- Adaptive pre-correction SNR/MER 40dB typical
- Multiple input interfaces available
- Configurable as: Transmitter, Transposer, On-channel SFN Gap-Filler
- Plug-in (rear) Power Supply & RF amplifier, each replaceable in less than 1 minute.
ISDB-Tb TRANSMITTERS

20 Countries deployed ISDB-T/Tb

KEY FEATURES for ISDB-Tb Version:

- Dual Mode: Analogue / Digital
- SFN: Static delay and relative synchronization
- REMUX option with following functions:
  - Layer combiner: A/B/C
  - PID Remapping / Insertion
  - Program Filtering
INPUT CARDS

FRONT PANEL

Note that one or two input cards can be used, for flexibility

Input Slot #1
Input Slot #2

RF In
(For Transposers, Gap Fillers)

2 x TSoIP + 2 x ASI
(For Transmitters)

More information on input cards later in presentation
REAR OF CHASSIS

REAR PANEL

- ✔ Power Supply is plug-in
- ✔ PA Module is plug-in
- Can be replaced in < 1 minute!

Components:
- GPS Receiver (opt.)
- Power Supply
- RF Power Amplifier
- 10 MHz In/Out
- GPS In
- AC Power
- Cooling Fans (4)
- RF Monitoring
- Feedback Pre-corrections
- RF Out
- 1 PPS In/Out
- 1U
WHERE ARE THE CABLES?

RF Power Amplifier
Modulator Board
Input Card
Power Supply
GPS Receiver Board
Interface Board
Controller Board

“No Cable” Design!
• Plug-in PA Module Assembly
• Complete unit is easily removed and replaced in a few minutes
2 & 3 RU Models – All can be configured as Transmitters or Transposers/On-Channel Gap Fillers

All feature Doherty HE PA stage - UHF digital power levels shown
(VHF also available)

- 2 RU Models:
  - 200W
  - 350W
  - 400W
  - OFDM TV
  - ATSC-1 TV

- 3 RU Models:
  - 200W
  - 350W
  - 400W
  - 550W
  - 600W
  - 750W
  - 1,000W

VHF also available
UAX / VAX OP SERIES

• Separate Exciter/Driver + PA Module
• Available output power: 200W to 2,000W
• Efficiencies typical 38% to 41%
• Adaptive pre-correction circuits with MER up to 39-40dB, typical
• Same input interfaces options as 1RU
• Embedded ASI & RF Switch Over matrix for Dual Redundant Exciters
• Hot Swappable Power Supplies
• ATSC-1, DVB-T, DVB-T2, ISDB-Tb, DAB+, Analogue
3+1 & 3.5+1 RU Models – All can be configured as Transmitters or Transposers/On-Channel Gap Fillers

All feature Doherty HE PA stage - UHF digital power levels shown (VHF also available)

- 2000 W
- 1500 W
- 1100 W
- 750 W
- 550 W
- 300 W
- 200 W

Note: Dual Drive Available
3.5RU PA MODULE

Full Power with any PS Failure

Note:
Same Power supply as used in several other GatesAir products (FAX / FLX)
UAX MULTI-COMPACT

• Up to 8 separate transmitter modules in a single 4 RU chassis
• Each can be configured separately
• Transmitter, Transposer or SFN Gap-Filler
• 15W per module
• Available output power: 8 x 15W rms
• Adaptive pre-correction circuits with MER up to 42 dBs
• ASI + IP + DVB-S/S2/S2 + RF input interfaces
• Embedded switch over matrix for 6+2 or 7+1 configurations
• Optional dual redundant GPS receiver & dual power supplies
UAX MULTI-COMPACT

REAR PANEL

- Power Supply #1
- Power Supply #2 (OPTIONAL)
- Satellite Multi-switch

RF Out#7  RF Out#6  RF Out#5  RF Out#4  RF Out#3  RF Out#2  RF Out#1
EFFICIENCY AND TOTAL COST OF OWNERSHIP (TCO)
There are some compelling reasons to update older equipment:

- Efficiency has significantly improved, reducing electrical energy costs
- Reduce room HVAC costs
- Dramatically reduce maintenance/adjustment (reduce site visits)
- Older units often difficult to repair
- Parts availability!
- Recent calculations for one customer:
  - Breakeven in < 3 years

Total Cost of Ownership (TCO): The Economics of Deploying High-Efficiency Transmitters - [https://go.gatesair.com/virtual-events.html](https://go.gatesair.com/virtual-events.html)

To be covered in more detail at a later Virtual Event (May 7th)!
INTUITIVE GUI AND ENHANCED SECURITY FEATURES
LOCAL / REMOTE CONNECTIVITY

- HTML-5 GUI
  - Standard Web Browser Connection
    (Products also have GPIO Interface)

Tx Sites

Local PC

Almost Anywhere

Remote PC’s, Smart Phones, Tablets
HTML-5 GUI Screens captured remotely on April 3rd, 2020 remotely - Brescia (Italy) Lab unit – UAXT-150-UC

Home Screen

FTR GNSS Status
The Event Log screen

- Filter enables Faults, Warnings, Info, Events to be selected
- Active only, Active + Cleared, Cleared
- Functions available for print file, e-mail and log file

Captured April 3rd remotely: Brescia (Italy) Lab unit – UAXT-150-UC
REMOTE GUI SCREENS

Content auto-fits rotated mobile tablet and phone devices
1. E-mail with encrypted security features
   - Transmitters will have the ability to send an e-mail to up to 5 addresses, when a fault and/or warning occurs. Encryption can be enabled/disabled. In addition, a fault log can be optionally attached.

2. Access Control List
   - Customers can limit staff who can access the transmitter management interfaces. The user adds the IP address and subnet mask of systems allowed to access the transmitter in the IP access table. Using the subnet mask, you can open it to every computer on a particular subnet, or limit it to single computer, using a 255.255.255.255 subnet mask.

3. LDAP (Lightweight Directory Access Protocol)
   - For those customers using LDAP on their network, we’ve added a LDAP client. If LDAP is enabled on the transmitter, login credentials are first sent to the configured LDAP server to be validated before allowing access to changing system parameters. If the LDAP server can’t be reached, the credentials are checked against the local user accounts and access is allowed if they match.
4. Secure Web GUI
   • A customer can now select if they want a secure web GUI. On our Linux based products, it’s a typical **https (Hypertext Transfer Protocol Secure)** connection. All data and commands flow through the https connection.

5. Secure WebSocket
   • On some products with less processing power, we are using a technology called “Secure WebSocket”. All commands and configuration data are passed through the encrypted socket. Non-critical data such as meter information are passed as before using unencrypted sockets.
INTEGRATED INPUT OPTIONS
• **Receive Cards**
  - Off-Air Receivers
  - Satellite Receiver

• **Tx Input Cards**
  - ASI / T2MI / SMPTE-310M
  - TSoIP
  - Analog Video/Audio
Note that one or two input cards can be used, for flexibility.

- Input Slot #1
  - Left side for Receive Cards (RF input or Satellite)

- Input Slot #2
  - Right side for Tx Input Cards (Digital or Analog)

- Touch screen LCD
- Control Ethernet Port
- USB Port
4 X ASI INPUT CARD

- For use in all GatesAir SRL Systems: UltraCompact, UAX/VAX-OP and ULX/VLX-OP models
- **4 x ASI** (Also used with T2MI or SMPTE-310M)
- Can seamlessly switch between any two of these inputs
- Lowest cost card for basic DTV tx systems
4 X ASI + ANALOG INPUT CARD

- For use in all GatesAir SRL Systems: UltraCompact, UAX/VAX-OP and ULX/VLX-OP models
- **4 x ASI** (Also used with **T2MI** or **SMPTE-310M**)
- **1 x Video / Audio** for analog systems
- “DualCast” software available
**2 X ASI + 2 X TSoIP INPUT CARD**

- For use in all GatesAir SRL Systems: UltraCompact, UAX/VAX-OP and ULX/VLX-OP models
- **2 x ASI** (Also used with **T2MI** or **SMPTE-310M**)
- **2 x TSoIP / a.k.a. GbE** (or ASI over IP) - Encapsulates the native Transport Stream into IP packets
- Can switch between any combination of 2 inputs
RF INPUT CARDS

• For use in all GatesAir SRL Systems: UltraCompact, UAX/VAX-OP and ULX/VLX-OP models

• 1 x RF Input

• 4 Versions:
  1. Direct Conversion (Zero IF) – used for on-channel gap fillers or Transposers (OFDM)
  2. Regenerative OFDM – Used for high quality Transposers
  3. Regenerative ATSC - Used for high quality Transposers
  4. ATSC Spectrum Restorer – Used for On-Channel ATSC Gap Fillers only (Includes new modulator board)
SATELLITE INPUT CARDS

• For use in all GatesAir SRL Systems: UltraCompact, UAX/VAX-OP and ULX/VIx-OP models

• 1 x SAT Input

• 2 Versions
  • DVB-S/S2 (existing design)
  • DVB-S2/S2X (New version released soon)
HTML-5 GUI Screens captured remotely on April 15th, 2020 remotely - Brescia (Italy) Lab unit – UAXT-150-UC
INPUT CARDS – SOME SELECTIONS

- **Transmitter (Digital)**
  - 4 x ASI

- **Transmitter (Analog & Digital)**
  - 4 x ASI + Analog

- **Transmitter (Digital)**
  - 2 x ASI + 2 x TSoIP (2 x GbE)

- **Transposer (Regenerative)**
  - 1 x RF (Regenerative)

- **SFN Gap Filler OFDM**
  - 1 x RF (Direct Conversion)

- **Satellite In + Transmitter (Digital)**
  - Sat In + 2 x ASI + 2 x TSoIP (GbE)
THANKS FOR WATCHING
QUESTIONS?

More Upcoming Virtual Events: https://go.gatesair.com/virtual-events.html

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