



# MAXIVA™ UATK ULTRA-COMPACT/ VATK ULTRA-COMPACT

Low Power UHF/VHF Transmitter / Transposer / Gap Filler

The new Maxiva™ UATK & VATK Ultra Compact family of UHF & VHF solid-state Transmitters, Transposers (Translators) and on-channel Gap-Fillers expands upon the proven foundation of GatesAir low-power systems with PowerSmart® high-efficiency technology. The UATK & VATK products are designed using the latest Kintex modulation hardware and software. The UATK & VATK products support ATSC 1.0, ATSC 3.0 and ISDBTb modulation standards. It provides today's digital broadcaster with a suite of compatible products to accommodate any coverage application, along with unmatched performance, reliability and quality.



The Maxiva UATK/VATK Ultra-Compact family further extends the capabilities of the Maxiva series, providing a single family of transmission products suitable for all broadcast applications. The Maxiva Ultra-Compact provides pre-filter power levels up to 700W, in an exceptionally compact and space-saving 1, 2 or 3 RU packages.

## Maxiva™ UAXT Ultra-Compact/ VAXT Ultra-Compact Product Features

### Maxiva UATK/VATK Ultra-Compact Platform includes:

- High efficiency broadband amplifier technology
- Power levels up to 700W (pre-filter average power)
- Frequency agile design
  - UHF Band IV/V, 470 to 702 MHz
  - VHF Band III, 170-240 MHz
  - VHF Band I, 54 to 88MHz
- Extremely compact, space-saving, 1, 2 or 3 RU 19" chassis
- Full local/remote control capability including:
  - Local touch-screen display
  - Web GUI interface (HTML5)
  - SNMP
- Capable of SFN and MFN Operation
- Automatic Adaptive Pre-correction Circuitry
- GLONASS/GPS Receiver for SFN Timing
- 2x ASI (BNC) & ASI over IP (RJ45)

### Transposer / Translator:

- Supports ATSC 3.0, and ISDBTb (COFDM) and ATSC (8VSB) standards.
- Direct baseband conversion (zero IF)
- ATSC (8VSB) Regenerative option available for optimum performance

### SFN Gap Filler:

- Includes a powerful echo cancellation circuit, 15dB of Gain Margin
- Low processing delay, < 10  $\mu$ S
- Cancellation window 20  $\mu$ S
- Selective cancellation window range 1.6  $\mu$ S to 820  $\mu$ S
- MER degradation < 2dB referenced to input

### Available Options:

- DVB-S/S2 Satellite Receiver input card (including CAM interface)

Designed for digital broadcasting, the Maxiva UATK & VATK Ultra-Compact is a platform available in Transmitter, Transposer or SFN Gap Filler configurations for ATSC 1.0, ATSC 3.0, and ISDB-Tb networks. The Maxiva Ultra-Compact Series provides an ideal solution for extending market coverage and filling in coverage gaps in challenging situations, including busy urban areas that require greater building penetration.

The Maxiva UATK & VATK Ultra-Compact family of Transmitters / Transposers / Translators provide efficient and reliable re-broadcast of the received signal in a space saving, reliable and robust package. The Gap Filler configuration adds a powerful echo cancellation feature to deliver exceptional on-channel performance. This combination of products enables broadcasters to address any network coverage requirement.

### Maxiva™ UATK/VATK Ultra-Compact

Maxiva™ UATK/VATK Ultra-Compact Front View (1RU)



Maxiva™ UAXT/VAXT Ultra-Compact Front View (2RU)



Maxiva™ UAXT/VAXT Ultra-Compact Front View (3RU)



Compact

Efficient

Broadband

### Typical Input Configurations

2x Gbe + 2 x ASI



1x DVB-S/S2 Rx + 2 x ASI + 2 x Gbe



1x RF Rx + 2 x ASI + 2 x Gbe



RF In  
(Translators)

2 Gbe + 2 ASI  
(Transmitters & SFN Gapfillers)

Control Buttons

Display

USB Port

Control Ethernet Port

# Maxiva™ UATK/VATK Ultra-Compact

## Specifications

Specifications and designs are subject to change without notice

| General  |   |
|--|---|
| RF Output Frequency Range  | UAXT Ultra-Compact: UHF Band IV/V, 470 to 702 MHz; VAXT Ultra-Compact: VHF band III, 170-240 MHz                                |
| Transmission Standards   | ATSC 1.0, ATSC 3.0 & ISDB-Tb  |
| RF Channel Bandwidth   | TV: 6, 7, or 8 MHz  |
| Rated Output Power   | Up to 700 Watts (before mask filter)  |
| Output Power Reduction Range   | 0 to -10 dB   |
| VSWR   | Protected against open or short circuit, all phase angles. Factory pre-set to 4% of nominal nameplate power (VSWR = 1.5:1)      |
| 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   |
| Inputs/Outputs   |   |
| RF Output Connector  | 1 x Type N Female, 50 ohms, rear access, 7-16 DIN for > 200 W   |
| Ethernet (Communications)  | 1 front, RJ-45  |
| Control/Monitoring   | HMTL5 Web GUI, SNMP V. 2, GPIO  |
| ASI Inputs   | 2 Inputs BNC female 75 ohms   |
| ASI over IP / STLTP  | 2 inputs, 10/100/1000BaseT  |
| AC Power   |   |
| AC Power Input   | 100 to 240 V AC, 50/60 Hz, IEC320 C14 Plug, 380 V 3 Phase, 4 Wire 1 RU Module Optional  |
| Power Factor ( cos Ø )   | > 0.95  |
| Redundancy   | Redundant power supply optional on some models  |
| Environmental  |   |
| Operational Temperature Range  | 0° to 45° C (32° to 113° F)   |
| Storage Temperature Range  | -40 to +70° C   |
| Relative Humidity  | 0 to 90%, non-condensing  |
| Altitude   | Up to 2,500 m (8,202 ft) above sea level, derate 2° C (3.6° F) per 300 m (984 ft) of elevation. (Altitude > 2,500 m on request) |
| Cooling Method   | Forced air-cooled, internal fans, airflow front to rear   |
| Acoustic Noise   | ≤65 dBA (front 1 m)   |
| Transposer and Gap Filler (OFDM-TV & 8VSB-TV) Performance (Optional RF input Card) |   |
| Power Output Stability   | ±0.5 dB   |
| RF Load Impedance  | 50 ohms   |
| Operating Load VSWR  | Up to 1.4:1 at full power   |
| RF Input Frequency Range   | Band III 168 to 242 MHz, or Band IV/V 470 to 702 MHz  |
| RF Input Connector   | 1 x Type N Female, 50 ohms, front access  |
| RF Input Level   | -80 dBm to -20 dBm (Standard Down Converter board)<br>-80 dBm to 0 dBm (ATSC 1.0 Regenerative Down Converter board)             |
| Selectivity  | > 60 dB @ ± 4.2 MHz   |
| Noise Factor   | < 6 dB  |
| Adaptive Echo Cancellation   | Standard (applies to Gap Filler only)   |
| Gain Margin  | > -15 dB typical  |
| Adjacent Channel Rejection   | > 35 dB   |
| Total Delay  | < 10 µS   |
| Echo Cancellation Window Size  | 20 µS   |
| Selective Cancellation Window  | 1.6 µS (time shift from 2 to 820 µS)  |
| Doppler Cancellation   | Yes   |

# Maxiva™ UATK/VATK Ultra-Compact Specifications

Specifications and designs are subject to change without notice

|   |  |
|---|--|
| MER                                     | Up to 34 dB, dependent on input MER  |
| MER Degradation                         | < 2 dB degradation referenced to input, at <34 dB input MER                                      |
| Response Variation                      | 0.2 dB, typical  |
| Spurious Output                         | < -60 dBc (after mask filter)  |
| Harmonics                               | < -60 dBc after mask filter, <-35 dB before mask filter  |
| <b>Compliance / Certifications</b>      |  |
| RoHS 2011/65/EU                         | ETSI EN 300 744  |
| Directive 2014/53/EU                    | ETSI EN 302 755  |
| Safety: EN 60215                        | ETSI EN 300 401 & ETSI TR101 496-1   |
| EMC: EN 301-489-1                       | CE Marked  |
| <b>ATSC 3.0 Transmitter Performance</b> |  |
| Standard                                | A/300:2021, ATSC 3.0 System / A/322 / A/324 and related standards                                |
| Power Output Stability                  | +/- 0.2dB typical  |
| RF Load Impedance                       | 50 Ohms  |
| MER                                     | ≥ 36 dB Typical  |
| Shoulder Level                          | ≤ -38 dB   |
| Group delay                             | 2nS, Typical   |
| Constellation                           | QPSK, 16QAM, 64QAM, 256QAM & 1024QAM (4096QAM with expansion board)                              |
| Code Rate                               | 2/15 to 13/15  |
| Guard Interval                          | GI1_192 to GI12_4864 (Supports SNF applications)   |
| FFT Size                                | 8, 16 & 32   |
| <b>ISDB-Tb Transmitter Performance</b>  |  |
| Standard                                | ABNT NBR 15601, ABNT NBR 15603   |
| Inputs                                  | 2x ASI TS/BTS BNC (f), 75 Ohm<br>and 2x RJ45 TS/BTS oIP  |
| FFT                                     | Mode 1 (2K), Mode 2 (4K), Mode 3 (8K)  |
| Code Rate                               | 1/2, 2/3, 3/4, 5/6, 7/8  |
| Guard Interval                          | 1/4, 1/8, 1/16, 1/32   |
| MER                                     | ≥ 36 dB Typical  |
| Hierarchical Modulation                 | Up to 3 layers   |
| Constellation                           | QPSK, 16QAM, 64QAM   |
| Time Interleaver                        | Supported  |
| Partial Reception                       | Supported  |
| <b>ATSC-1.0 Specifications</b>          |  |
| Standard                                | A/53, A/110  |
| Power Output Stability                  | +/- 0.2 dB typical   |
| RF Load Impedance                       | 50 Ohms  |
| Shoulder Level                          | ≤ -40 dB   |
| Modulation                              | 8-VSB  |
| Input Bit Rate                          | 19.39 Mbit/s   |
| Bandwidth                               | 6 MHz  |
| Max. Processing Delay                   | Up to 1 second (programmable)  |
| Signal to Noise, EVM                    | >38 dB (typical >40 dB), EVM <2.9 (typical <1.0 %)   |
| Shoulder Level                          | <-38 dB (Measured per ATSC doc. A/64B)   |
| Sideband Performance                    | Compliant with FCC emission mask, when measured at the output of GatesAir supplied output filter |
| Harmonic Radiation & Spurious           | Meets mask requirements specified in FCC 5th and 6th report and order                            |

# Maxiva™ UATK/VATK Ultra-Compact Models & Power Levels Specifications

Specifications and designs are subject to change without notice

| Digital TV Model     | OFDM Power Before Filter (W) Broadband <sup>1</sup> | OFDM Power Before Filter (W) Wideband <sup>2</sup> | 8VSB Power Before Filter (W) Broadband <sup>1</sup> | 8VSB Power Before Filter (W) Wideband <sup>2</sup> | Size | COFDM Broadband Efficiency |
|----------------------|---|--|---|--|------|----------------------------|
| <b>UHF Models</b>    |   |  |   |  |      |                            |
| UATK-15-UC           | 15  | -----  | 20  | -----  | 1 RU | 8%                         |
| UATK-30-UC           | 30  | -----  | 40  | -----  | 1 RU | 12%                        |
| UATK-50-UC           | 50  | -----  | 70  | -----  | 1 RU | 16.5%                      |
| UATK-80-UC           | 80  | -----  | 130   | -----  | 1 RU | 19.5%                      |
| UATK-150E-UC         | 150   | -----  | 150   | -----  | 1 RU | 29.5%                      |
| UATK-250E-UC         | 200   | 300  | 350   | 400  | 2 RU | 31%                        |
| UATK-400E-UC         | 400   | 400  | 400   | 400  | 2 RU | 32%                        |
| UATK-450E-UC         | 450   | 550  | 700   | 800  | 3 RU | 33%                        |
| UATK-700E-UC         | 700   | <b>750</b>   | 900   | 1,000  | 3 RU | 34%                        |
| <b>VHF Models</b>    |   |  |   |  |      |                            |
| Digital TV Model     | OFDM Power Before Filter (W) Broadband <sup>1</sup> |  | 8VSB Power Before Filter (W) Broadband <sup>1</sup> |  | Size | COFDM Broadband Efficiency |
| VATK-15-UC           | 15  | -----  | 20  | -----  | 1 RU | -----                      |
| VATK-30-UC           | 30  | -----  | 40  | -----  | 1 RU | -----                      |
| VATK-80-UC           | 80  |  | 120   | -----  | 1 RU | 17%                        |
| VATK-150-UC          | 150   | -----  | 150   | -----  | 1 RU | 29%                        |
| VATK-250-UC          | 250   | -----  | 350   | -----  | 2 RU | 31%                        |
| VATK-450-UC          | 450   | -----  | 450   | -----  | 2 RU | 39%                        |
| VATK-500-UC          | 500   | -----  | 700   | -----  | 3 RU | 40%                        |
| VATK-700-UC          | 700   | -----  | 900   | -----  | 3 RU | 41%                        |
| <b>L-Mode Models</b> |   |  |   |  |      |                            |
| Digital TV Model     | OFDM Power Before Filter (W) Broadband <sup>1</sup> | OFDM Power Before Filter (W) Wideband <sup>2</sup> | 8VSB Power Before Filter (W) Broadband <sup>1</sup> | 8VSB Power Before Filter (W) Wideband <sup>2</sup> | Size | COFDM Broadband Efficiency |
| VATK-50L-UC          | -----   | 50   | -----   | 70   | 1 RU | -----                      |
| VATK-200L-UC         | -----   | 200  | -----   | 300  | 2 RU | -----                      |
| VATK-400L-UC         | -----   | 400  | -----   | 400  | 3 RU | -----                      |

<sup>1</sup> Broadband PA's cover the frequency band with one PA type

<sup>2</sup> Wideband PA's cover the frequency band with two PA types