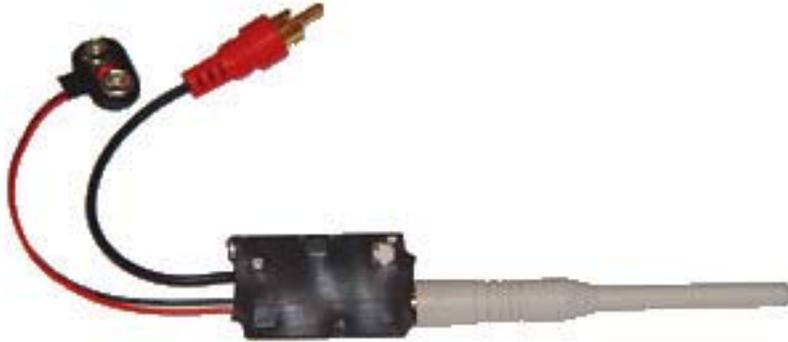


*VOSTEK ELECTRONICS*

**AUDIO/VIDEO TRANSMITTER MX 3000 FOR ISM  
BAND 2.4 GHz**

**FCC ID: OGR-MX3000**

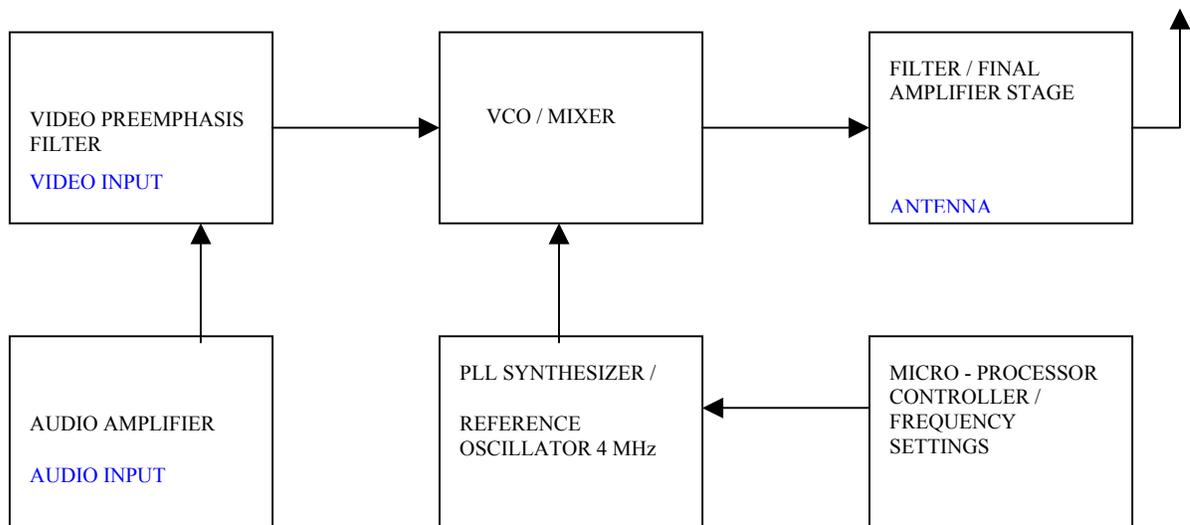


**USER'S MANUAL**

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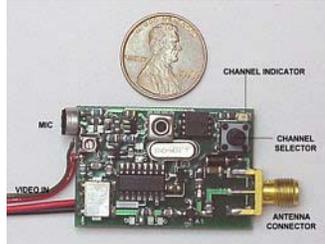
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## BLOCK DIAGRAM MX-3000



Thank you for your purchase of the VOSTEK ELECTRONICS' MX 3000 Video Transmitter Module. The MX 3000 is part of a series of innovative low power Video transmitters. MX 3000 can be used for various applications in custom Wireless Video Transmission systems, including Wireless Video Surveillance Systems, fully duplex, remote video monitoring equipment. A practical application for these Video Transmitters includes law enforcement and security applications. They have been employed by the military, in research, by industry, and in a variety of recreational applications both mobile and fixed. The Instruction Manual contains information's MX 3000 and provides service details, alignment instruction and schematic diagram for this transmitter.

# 2.4 GHz AUDIO/ VIDEO TRANSMITTER MX 3000



MX 3000 is a smallest Audio/ Video transmitter for 2,4 GHz and measures only 1.5" X 1" X 0.3". It is fully synthesized 8 channels PLL unit, made for SECURITY applications, testing and experiments! This transmitter has built a preemphasis filter for the best picture quality! Power supply is 9 -12 V/ 140 m A. The video level can be adjusted with the potentiometer on the board. VRX 24 L receiver is matching unit for this transmitter. It comes with a full 1-year warranty. The antenna connector is an SMA type. The range can be increased using the special high gain antennas. Sound is excellent quality with a microphone built-in. Recommended receiver is **VRX 24L** (PART 15 FCC rules). Recommended antenna for the transmitter is a small dipole 0 dBi or less for a short range or directional high gain antenna up to 14 dBi. Two channels have been in use: 2452 MHz and 2481 MHz.

## FEATURES:

- SIZE: 1.5" X 1" X 0.3".
- BATTERY POWERED 9 V – 12V
- CURRENT CONSUMPTION 140mA/12V
- MODULATION WFM (0-6 MHz)
- SOUND CARRIER 6 MHz 25 kHz deviation
- MICROPROCESSOR FREQUENCY 4 MHz
- HIGH STABILITY
- TWO CHANNELS IN 2.4 GHz RANGE
- TEMPERATURE RANGE -40 +75°C
- BUILT-IN PREEMPHASIS FILTER
- VIDEO INPUT 1V PEP/75 ohm
- AUDIO INPUT 8 mV (microphone input)
- OPTIONAL EXTERNAL ANTENNA (SMA connector)
- BROADCAST QUALITY PICTURE
- REVERSE POLARITY PROTECTED
- MATCHING RECEIVER VRX 24L
- FCC PART 90 APPROVED
- 1 Y WARRANTY

Model No: **MX 3000**

**WARRANTY VOID IF MODIFIED!**  
**MAX. VOLTAGE ALLOWED 12.6 V!**

## **MX 3000 TECHNICAL INFORMATION:**

### **Operating Distance**

3000 ft line of sight (US / Canadian version), more or less depending on conditions, antennas used, elevation, etc. Government & Export version will have considerably more range.

### **Operating Frequency**

2300 MHz – 2500 MHz in 8 user selectable channels. Up to 8 systems may be used in the same area simultaneously with VRX 24L receiver. According to FCC rules only channels 7 and 8 can be used. Frequency 2452 MHz and 2481 MHz.

### **Transmission Type**

FM, Crystal referenced, synthesized phase locked loop. Frequency controlled by microprocessor. Crystal reference 4 MHz.

Frequency stability (-40 to +75°C,           ± 0.003%

Radiated power (US & Canadian version)

Spurious & harmonic response           < 50dBc

### **Video System**

NTSC or PAL

Video level (internally adjustable)   1.0 Volt p-p into 75 Ohms

Impedance                                   75 Ohms

Video deviation                           ± 6 MHz (adjustable from ± 1 to ± 5 MHz)

### **Antenna US/Canada:**

0-14 dB gain. Flexible helical type (Rubber Duck), or PANEL (YAGI) SMA male connector

### **Audio Modulation Type**

FM

Maximum deviation                   ± 25 kHz

System signal to noise ratio at 50kHz deviation   65 dBA

Pre & deemphasis                       75µ Second

### **Audio Input & Outputs**

All dB figures referenced to 0 dB = 0.774Vrms

Microphone input level (full gain to minimum gain)           -37 dB to -6 dB for ± 50 kHz deviation (5 mV)

Microphone input impedance       2k Ohms

Power for Electret microphones (switchable)   +9 VDC @ 1mA max.

Line input impedance                 10k Ohms

Frequency response at 20 dB below full deviation 40 Hz to 15 kHz +1, -3 dB, 60 Hz to 10 kHz ± 1 dB (Option: may be extended to -3 @ 30kHz.)

Total harmonic distortion (before limiting) 0.5% at 400 Hz (0.25% typical)

**Audio Carrier frequency** 6.0 MHz

Audio Carrier level 25 dB bellow the carrier

**Power** 9 V-12 VDC Nominal. See below for details.

**Transmitted power levels, current consumption and maximum voltage**

Type of Transmitter: CVT-1000	Transmitted Power Levels	Current Consumption / Maximum Voltage
US & Canada version		135 mA / 9.0V Max
Government & Export version		
	POWER AMP VERSION	

**Mechanical**

**Size** 1.5" X 1" X 0.3"

**Weight** 8 grams

With antenna 11 grams

**Connectors**

Power & Audio N/A

Video IN RCA male 75 Ohm

Antenna SMA

**Environmental**

Operating temperature -40°C to +60°C

Storage temperature -40°C to +70°C (-40°F to + 158°F)

Humidity (non-condensing) 90%

# **FREQUENCY SETTINGS AND POWER UP:**

## **Powerup**

At powerup, the unit will retrieve the last used channel, program the PLL with this channel, and display the channel by blinking the LED the same number as the channel number 7 or 8.

## **Displaying Current Channel**

Push button is located on the board. To display the current channel, press the pushbutton once and release. The current channel will blink. After approx. 5 seconds, the current channel will again blink.

## **Changing to a New Channel**

### **/ Frequency allocation /**

## **Important message to users**

To change to a new channel, press the pushbutton once and release. The current channel will blink. Press and release the pushbutton again **before** 5 seconds has elapsed and the channel will increment by 1 and the LED will blink the new channel. You must count to 7 in order to set the first user's channel frequency 2452 MHz, the next channel is channel 8 (LED will blink 8 times), it means that unit is set to Channel 8 frequency 2481 MHz. Repeat this step until the desired channel is reached (channel 7 or channel 8), waiting for the blinking to stop each time before pressing the button again.

Once your desired channel is reached (7 or 8), wait 5 seconds until the LED again blinks your desired channel. Your new channel is now saved in memory. If unit turned off, the microprocessor will save in memory the last used channel.

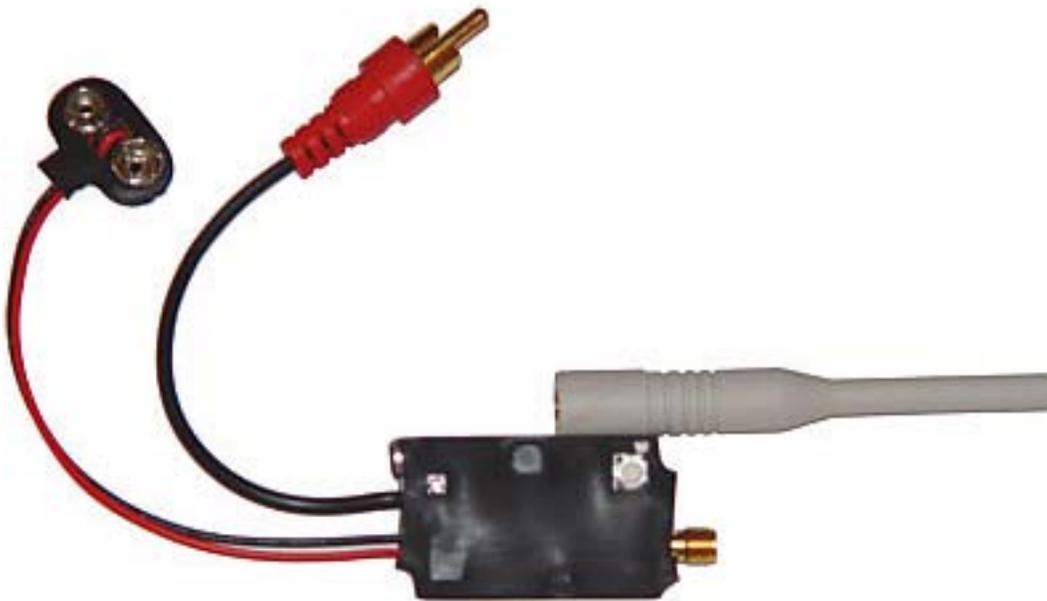
### **Channels 7 and 8 have been in use**

**FREQUENCIES: 2452 MHz and 2481 MHz**

**NOTE: DO NOT USE ANY OTHER CHANNELS (FREQUENCIES) OUTSIDE OF FCC LIMITS. USE STRICTLY CHANNELS 7 or 8. THE OTHER CHANNELS (FREQUENCIES) OUTSIDE OF THE AUTHORIZED BAND ARE PROHIBITED AND NOT RECOMMENDED BY THE MANUFACTURER! ALL WARRANTIES VOID IF MODIFIED!**

## **INSTRUCTIONS:**

1. CONNECT THE ANTENNA TO SMA CONNECTOR
2. CONNECT DC BATTERY POWER 9 V – 12 V
3. SWITCH TO THE CHANNEL 7 or 8 BY FOLLOWING THE INSTRUCTION ABOVE
4. CONNECT RCA CABLE TO VIDEO SOURCE 1 V / 75 OHMS
5. SWITCH ON RECEIVER **VRX 24L** FOR DESIRED CHANNEL 7 OR 8
6. CONNECT THE RECEIVER TO VIDEO (AUDIO) MONITOR



### **1. Warning to Users @ FCC 15.21 & 15.105**

***Warning: Changes or modifications not expressly approved by Vostek electronics could void the user's authority to operate the equipment***

## 2. FCC Label @ FCC 15.19

- **For Class B - Unintentional Radiators**

*This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.*

### **FCC ID: OGR-MX 3000**

## **RF EXPOSURE REQUIREMENTS @ 1.1310 & 2.1091**



**WARNING:** To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.

The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter

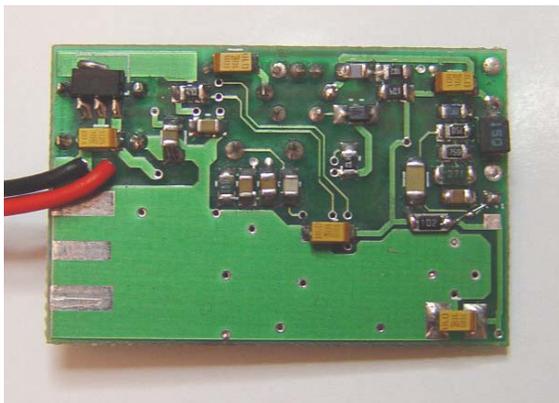
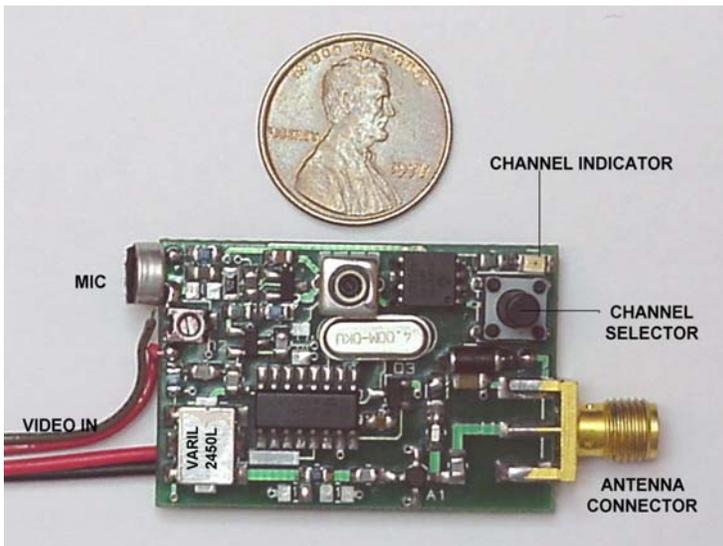
### FCC INFO:

This equipment has been tested and found to comply with the limits for Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC ID: OGR-MX3000**  
**MODEL: MX 3000**  
**VOSTEK ELECTRONICS**

FCC LABEL



TOP AND BACK OF THE UNIT

**CONTACT INFO:**

**VOSTEK ELECTRONICS**  
**P.O. BOX 60043, 1032 PAPE AVETORONTO, ONT**  
**M4K 3Z3**  
Email: [vostek@globility.com](mailto:vostek@globility.com)

**NOTE:**

**ATTENTION TO OEM USERS OF OUR WIRELESS VIDEO/AUDIO MODULE MX-3000:**

The OEM Manufacturer who employs our wireless module MX-3000 must have their own FCC ID Label with the following wording:

"This device contains Vostek Electronics' Radio Module" [FCC ID: OGR-MX3000](#)

THIS DEVICE CONTAINS VOSTEK ELECTRONIC'S  
RADIO MODULE FCC ID: OGR MX-3000



**FCC LABEL:**

FCC ID: OGR-MX3000  
MODEL: MX 3000  
VOSTEK ELECTRONICS