

The most important thing we build is trust.

Software, VETA Transmitter Series



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Revision History

Version	Date	Main Changes from Previous version	Edited by	checked
X1	4-26-2010	Initial Release – Extracted detailed software operation for VETA Transmitters into single manual to support VTx GUI	DRF	
1	4-19-2011	Transferred from 100-M0143X1	OdM	OdM

1. Acronyms

This section lists and describes the various acronyms used in this document.

Name	Meaning
16QAM	16-state Quadrature Amplitude Modulation
AES	Advanced Encryption System
ABS	Basic Encryption System (8 bit)
BER	Bit Error Rate
COFDM	Coded Orthogonal Frequency Division Multiplexing
FEC	Forward Error Correction
GUI	Graphical User Interface
KBaud	Kilobaud per second
Kbps	Kilobits per second
Mbps	Megabits per second
MPEG	Moving Picture Experts Group
NTSC	National Television System Committee
PAL	Phase Alternation Line
QPSK	Quadrature Phase Shift Keying
QAM	Quadrature Amplitude Modulation
RF	Radio Frequency
RX	Receiver
SNR	Signal-to-Noise Ratio
TS	Transmit Stream
TX	Transmitter
VDC	Volts (Direct Current)
VDL	VETA Digital Link
VETA	Very Efficient Transmission Apparatus
VR	VETA Receiver
VT	VETA Transmitter
VMT	VETA Miniature Transmitter
VNA	VETA Network Adapter

2. About this Manual

This manual describes how to use the software application to interact with VETA family transmitters. All the transmitters in the family have the same basic functions. The manual is divided into the following main sections:

- Software Control Overview
- Drop-Down Menu Definitions
- Status Elements Details
- Tab Definitions
- Default Configurations

3. Software Control Overview

This software is used for all GMS products based on Very Efficient Transmission Apparatus (VETA) transmitters, including all variations of the VETA Transmitter (VT) and the VETA Miniature Transmitter (VMT). However, each product uses a unique control cable. Control cables, as well as connector pin outs, are described in detail in corresponding product manual.

Configuration, control and monitoring of the VETA Series transmitters are accomplished using GMS' optional (sold separately) MS Windows-based VETA Tx configurator software program (GMS Part Number 8970914-xxx*). This Graphical User Interface (GUI) style program provides the end user with an easy way to interface with the VETA Transmitter units. During normal operation, once a VETA Digital Link (VDL) is established, the GUI does not need to be active and can be disconnected from the VETA Tx unit after the link is established.

3.1 System Requirements

The VETA Tx Configurator program has been developed and tested on Windows XP (service pack 3), Vista (32-bit) (Service Pack 2) and Windows 7 (32-bit). Although the program may work properly on other operating systems, no GMS support or assistance can be provided concerning other operating systems.

3.2 Software Installation

3.2.1 Download Method – Setup Utility

Cobham - GMS Products customer service will provide a link to the folder containing the VTx Setup package.

When you click the link, your default browser will start the file download. Depending on your computer's security settings, you may see a security-warning screen shown in Figure 1

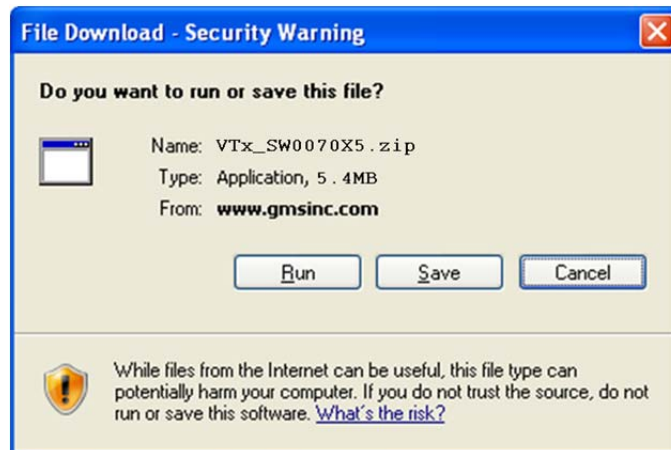


Figure 1 - File Download Security Screen

If so, click on the Save button to proceed. The Save As screen should appear (Figure 2). The file can be saved at any convenient location. Accept the default file name. Remember the location where the file is stored.

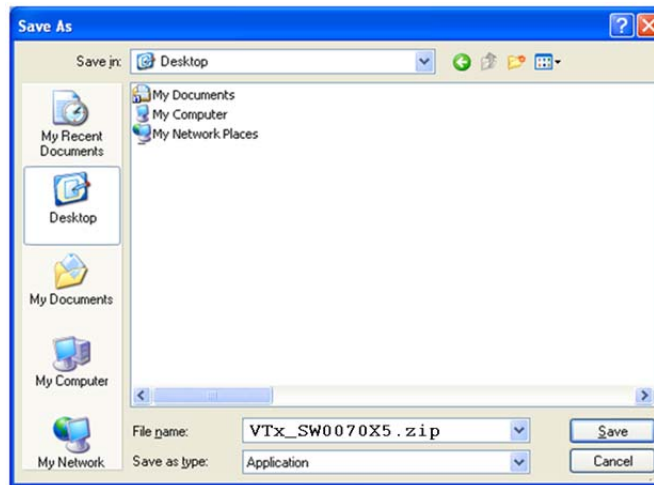


Figure 2 - Save As Screen

The file should complete downloading (Figure 3).

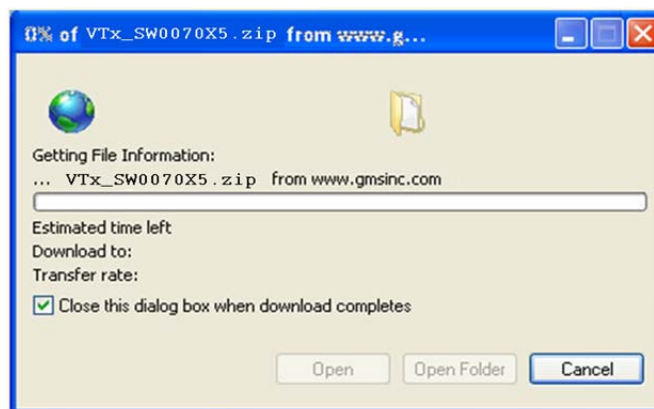


Figure 3 - Download Progress Screen

The file must be 'unzipped' (decompressed) to be used.

Windows XP has numerous options to extract zip files. One option is to use Windows Explorer. Locate the file in Windows Explorer and right mouse click on the file name. An option menu for the file, similar to Figure 4, will appear. Any of the 'Extract' options will uncompress the file(s).

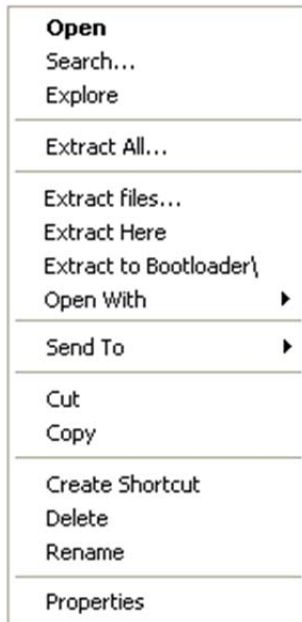


Figure 4 - Option Menu

The setup package will contain the files listed in Figure 5.

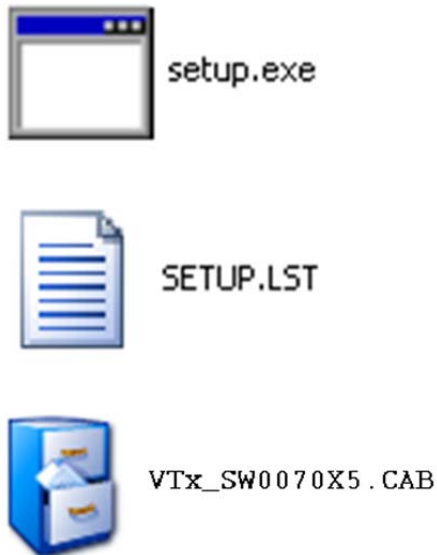


Figure 5 – Files in Setup Package

Run the setup.exe program. The program will initially copy files and display the screen shown in Figure 6.



Figure 6 - Setup Copying Files

The introduction screen shown in Figure 7 will be displayed when the setup application is ready to start.

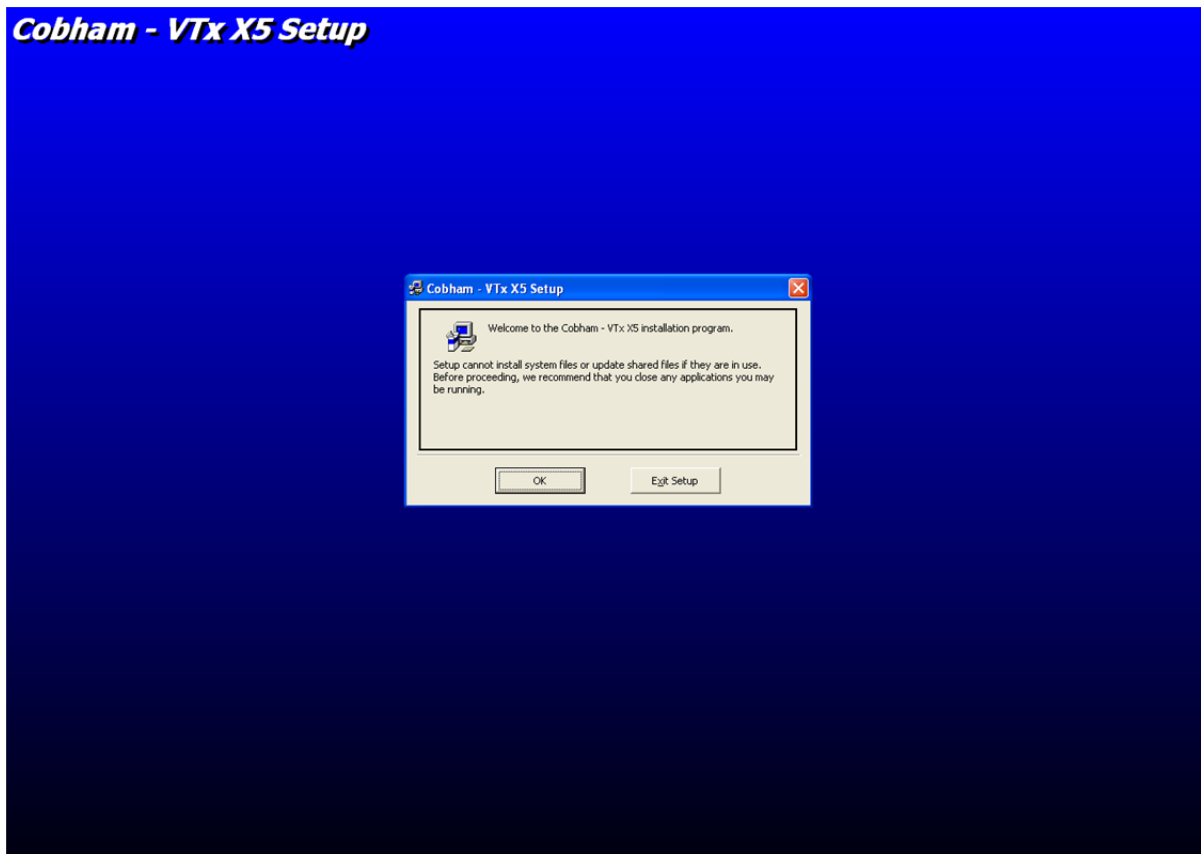


Figure 7 – VTx Setup Introduction Screen

Continue with the installation by clicking the OK button. The next screen, Figure 8, allows you to change the installation directory. A new location can be selected by clicking the Change Directory button. It is recommended that the default directory be used.



Figure 8 – Installation Directory Selection



Click the button to begin the installation.

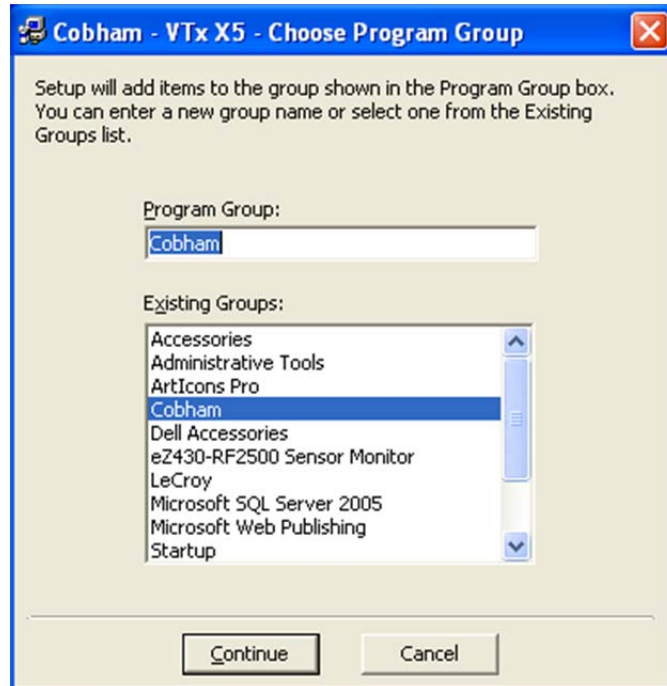


Figure 9 – Choose Program Group

Figure 9 shows the next screen. This allows you to modify the program group that windows creates to launch the program from the All Programs section of the windows Start menu. It is again recommended that the default be used.

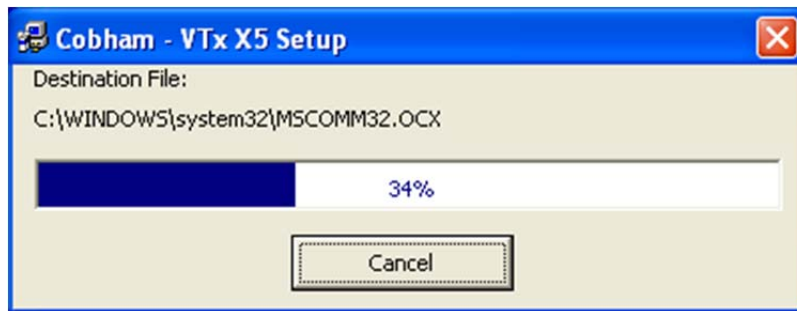


Figure 10 – File Installation

The application will load and register the Configurator and support files (Figure 10).



Figure 11 – Setup Successfully Completed

The screen shown in Figure 11 displays when the installation has successfully completed.

3.2.1 CD Method – Setup Utility

The application is also available on the CD delivered with the product. The installation follows the same screens that were shown in 3.2.1. The following instructions outline the installation process for the VETA Tx Configurator program:

- Insert provided CD-ROM into computer.
- Click on 'setup.exe' file. This will launch the VR Setup program. Several initial setup files will begin to be copied onto the computer.
- The VTx Setup program will prompt the user to click on the 'computer icon' button to begin installation. If desired, the user can change the destination directory from the default. Click on the 'computer icon' button.
- The VTx Setup program will then prompt the user to 'Choose Program Group'. If desired, the user can change the program group from the default. Click on the 'Continue' button.
- After installing the VETA Tx Configurator program, the VTx Setup program will put up a window indicating that setup was completed successfully. Click 'OK'.

3.3 Product Control & Status Monitoring Approach

Advanced control of VETA transmitters is available by using the configurator program. Typically, users may want to customize the factory provided default configuration based control settings (such as frequency, modulation parameters or scrambling keys).

GMS transmitters and receivers provide programmable presets or configurations that can be set up through special programming software by Administrators. The user selects configurations through an application program. The VMT allow 16 configurations and the VT allows 8 configurations.

Administrators define the configurations for specific applications. Each configuration completely defines all of the unit parameters including center frequency, modulation parameters, video and audio parameters, user data and encryption. Field personnel will select specific configuration via pre-determined guidance from the Administrators. Matching the transmitter operation to the receiver operation is as simple as selecting the same configuration for both. For example: If the transmitter is set to configuration #3, then the receiver needs to be set to configuration #3 for them to operate together.

3.4 VETA Tx Configurator Functions

The VETA Tx Configurator program provides the user access to different configuration, control and monitoring options. Up to 32 VETA VTx units can be connected to the GUI.

When the VETA Tx Configurator program is launched, it will detect all the VETA Tx units connected to the computer. However, it will not detect units connected to the computer after the program is launched. In this case, the user should close the program and open it again. If the program cannot find any valid devices connected, the screen shown in Figure 12 will be displayed. The user can exit the program or check the connection and then try again.



Figure 12 – VETA Tx Configurator

If the program finds valid devices on any com ports, it opens up the main control window. The program generates a message while collecting unit information. The main window is shown in Figure 13.

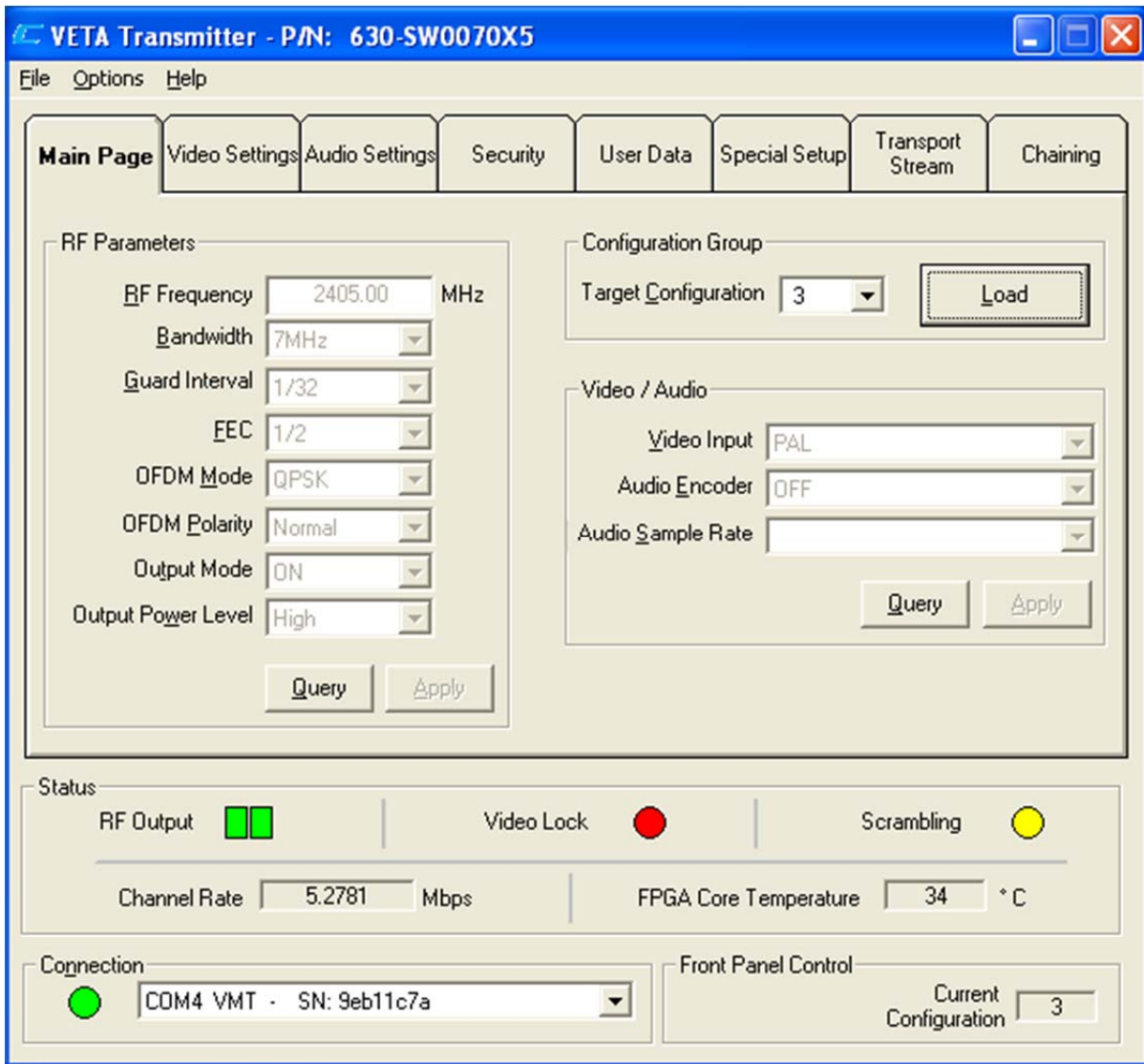


Figure 13 – VETA Tx GUI Main Screen

As the figure shows, the application window consists of tab groups of associated functions and a status / connection area at the bottom of the window. The status / connection area remains visible apart from which tab is active.

3.5 Access levels

As was described previously, the VETA Control software has two levels of access – a User level and an Administrator level. To have full access to the controls, it is necessary to enter the password provided by GMS into the Administrator Login window. The Options pull-down menu provides access to this window. The password can only be changed by the factory.

User level access only allows changing the predefined configuration groups.

3.6 Transmitter Differences

The two basic transmitter types (VT and VMT) have different feature sets. Table 1 details these differences.

Table 1 – Transmitter Differences

Function	VMT	VT
Output High Low Switch	0 = low level 1 = high level (default)	0 = Low Power 1 = Medium Low Power 2 = Medium High Power 3 = Full Power
Output Attenuation -Med-Low Power	NOT AVAILABLE	Used
Video Profile	Used	NOT AVAILABLE
Audio PID	NOT AVAILABLE	Used
Audio PID 1	Used	NOT AVAILABLE
Audio PID 2	Used	NOT AVAILABLE
Audio 2 Enable	Used	NOT AVAILABLE
Core Temperature	Used	NOT AVAILABLE
Video Stream ID	Used	NOT AVAILABLE
Audio Stream ID	Used	NOT AVAILABLE
Transport Stream Version	Used	NOT AVAILABLE
Provider Name	Used	NOT AVAILABLE
Transport Stream Switch	Used	NOT AVAILABLE
Available Configurations	16	8

4. Pull-Down Menu Definitions

This section discusses the Pull-Down Menus that include *File*, *Options* and *Help*.

4.1 File

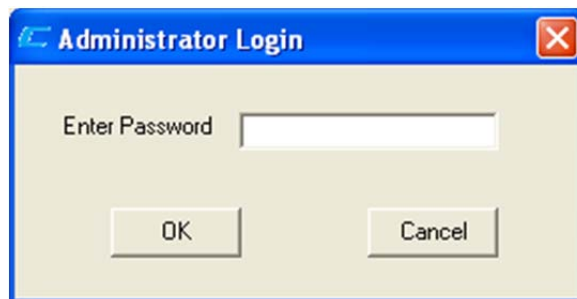
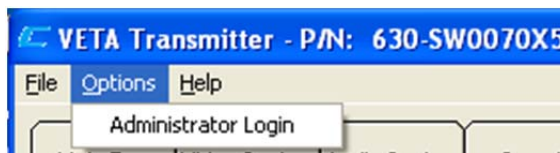
This menu contains only one selection - *Exit*. The *Exit* selection closes and exits the PC control software. Alternatively, the X box in the upper right hand corner of the window can be used to exit the program.



4.2 Options

The number of selections in this menu depends on login level.

For user level, this menu contains only one menu – Administrative Login, which allows the user to access more selections and widen the control by entering password that can be obtained from GMS. The password cannot be changed. Contact the factory for the password.



Administrator login (see Figure 14) adds the following selections:

- Log Off
- Restore Default Configuration
- Load Configuration File
- Write License Code
- Write License File
- Create Log File

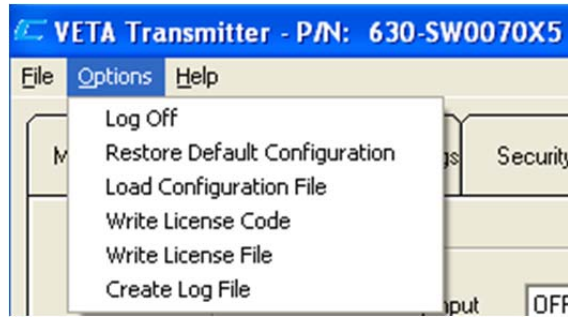


Figure 14 – Options

4.2.1 Load Configuration File

This is a special feature that allows the Administrator to change all the parameters of the unit at once. GMS provides Configuration File that can be modified before loading into the unit. Examples of Default Configurations Files are shown in Table 12, Table 13, and Table 14.

After the desired changes are made in the file, save and close it. Ensure that no other Excel file is open during loading. Click *Load Configuration File* and select file from desired location.

4.2.2 Write License Code/File

This option allows the user to enable features that are optional (e.g. advanced encryption) when new licensing option is purchased, without sending the unit back to factory. Depending on the version of the unit, the user will need to load Code or File. Contact GMS for details.

4.2.3 Restore Default Configuration

This option should be selected only after new Firmware was loaded into the unit.

4.2.4 Log Off

Clicking *Log Off* will restrict access to User Parameters only.

4.2.5 Create Log File

Clicking on this selection will create a log file in the same directory as the application. E.g. if the program is on the desktop, then a *Logfiles* subfolder will be created automatically for the desktop. This folder will contain a text file with the time stamp in the file name. The log file lists all the commands that were executed. Logging can be disabled by clicking the Disable Logging menu selection (see Figure 15).

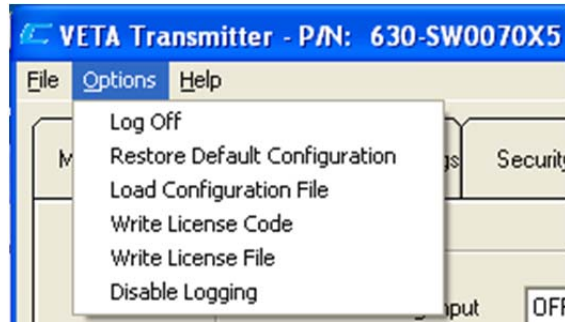


Figure 15 – Options

4.3 Help

Help menu has three selections: *Manuals*, *FW Version* and *About*.

4.3.1 Manuals

This manual is attached to the Control Software. Clicking this selection will launch the manual as a PDF file.

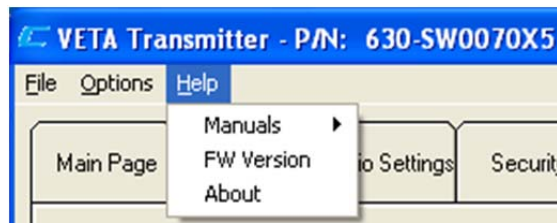


Figure 16 – Help

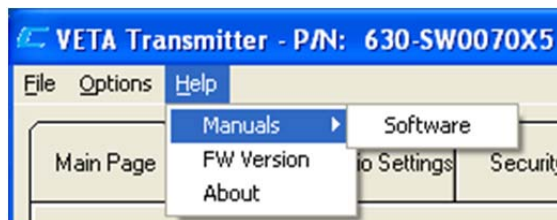


Figure 17 – Help- Manuals

4.3.2 FW Version

This menu contains the Firmware Version of the unit, FPGA Version number of the firmware and the Serial number of the unit. See Figure 18.



Figure 18 – VMT FW Version Window

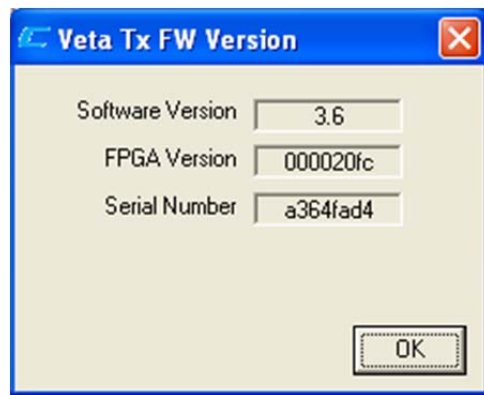


Figure 19 – VT FW Version Window

4.3.3 About

Choosing this selection displays the *Software* version of the PC control program. See Figure 20.



Figure 20 – About Box Window

5. Status Elements Details

The Status Area includes *Status*, *Connection* and *Front Panel* groups.

5.1 Status Group

Status group has five indicators.

The RF output status indicates the output power level.

The Video Lock status is an indication that the transmitter has line-locked onto the analog video input signal.

Scrambling Status indicates that outgoing signal is scrambled (Yellow).

Channel Rate Displays channel rate depending on Modulation parameters. Displayed in Mega Bits per Second (Mbps)

FPGA Core Temperature Displays the Core Temperature in Celsius of the VMT FPGA.



Figure 21 – VMT Status



Figure 22 – VT Status

5.2 Connection Group

The left part of drop-down box shows communication ports that had VETA transmitter units connected at the opening of the Control GUI. The transmitter type and the serial number of the corresponding unit are displayed next to the communication port (Figure 23).



Figure 23 – Connection

If more than one device is connected, the user can switch between devices by clicking on the desired com port in the drop-down list. The main window will be refreshed and the parameters of the corresponding device will be displayed. (Figure 24)

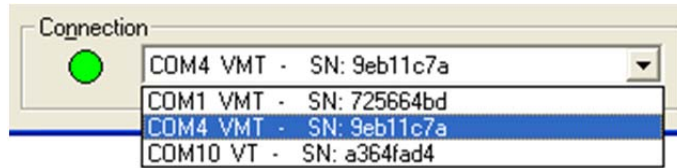


Figure 24 – Multiple Transmitter Availability

The indicator on the left of the drop-down list indicates the connection status. When the indicator is green, the device is operating properly. When the indicator is gray, communications with the transmitter has been lost and the application is trying to reestablish the connection (Figure 25). When it is red, the connection has been lost and the application is requesting user direction (Figure 26 and Figure 27).

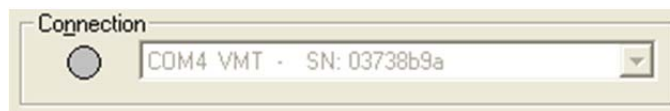


Figure 25 – Trying to Reestablish the Connection

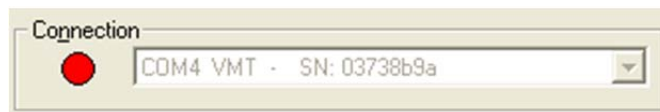


Figure 26 – Connection Lost



Figure 27 – Request for User Direction

5.3 Front Panel Control Group

This group consists of a *Current Configuration* box (Figure 28). This field reports the last loaded configuration number. Changes applied after configuration has been loaded are saved immediately into current configuration.

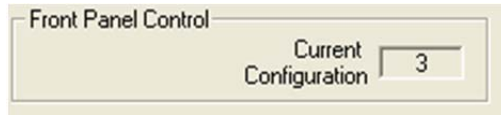


Figure 28 – Front Panel Control Group

6. TAB Definitions

6.1 Main Page Tab

The VETA Transmitter Control software contains eight tabs: *Main Page*, *Video Settings*, *Audio Settings*, *Security*, *User Data*, *Special Setup*, *Transport Stream*, and *Chaining* tabs (see Figure 13). It also has three pull-down menus consisting of the *File*, *Options* and *Help*. Under the menus are additional pull down submenus and selections which are explained in detail later in this document.

The *Main Page* tab consists of the *RF Parameters* group, the *Configuration Group* and the *Video/Audio* group.

6.1.1 The RF Parameters Group

This group consists of the following fields as shown Table 2 below along with explanation of each. Any field marked “R” in the column labeled ‘R/W’, indicates that the field is a “read” only (a status indicator). The user cannot change it. Any field marked “R/W” or *Read/Write*, indicates that the value can be changed by the user.

Table 2 – RF Parameters Field Definitions

Field	R/W	Description
RF Frequency	R/W	RF output frequency. Desired frequency is entered in MHz.
Bandwidth	R/W	Determines the BW of transmit signal. Desired bandwidth is selected from the following values: 6, 7, 8, 2.5 or 1.25 MHz. 2.5 and 1.25MHz BW are optional and will not be selectable if they have not been licensed.
Guard Interval	R/W	Desired modulation guard interval size is selected, values are COFDM Mode dependable: 1/32, 1/16, 1/8 or 1/4. For Narrow Band Modes: 1/16, 1/8
FEC	R/W	Desired modulation FEC rate is selected, values are COFDM Mode dependable: 1/2, 2/3, 3/4, 5/6, 7/8 For Narrow Band Modes: 1/3, 2/3
OFDM Mode	R/W	OFDM modulation type: QPSK, 16QAM, or 64QAM. For Narrow Band Modes: QPSK or 16QAM
OFDM Polarity	R/W	Desired OFDM polarity is selected, Normal or Inverted
Output Mode	R/W	Output Mode controls power to the Power Amplifier / RF portion of the Transmitter and allows the following values: <i>Off</i> or <i>On</i> . [NOTE: If ‘OFF’ is selected, the transmitter can still be configured]

Field	R/W	Description
Output Power Level	R/W	Output power level. Desired output level of VT is selected: <i>Low, Medium Low, Medium High or Full Power</i> Desired output level of VMT is selected: <i>Low or Full Power</i>

After changing any “R/W” field with a new value the user must click on the *APPLY* button for the change to take effect. The change that did not yet take place appears in a magenta color. This indicates that the displayed parameters are different from the current unit settings. Clicking on the *Query* button will cancel the operation and restore the display to the current unit values.

6.1.2 Video / Audio Group

This group consists of fields that also appear on the Video Settings and Audio Settings tabs. They allow for quick examination and setting of the key video and audio parameters. The fields are described in Table 3.

Table 3 – Video / Audio Field Definitions

Field	R/W	Description
Video Input	R/W	Desired video input format is selected from the following values: <i>PAL, NTSC w/ Pedestal, NTSC, S-Video PAL, S-Video NTSC w/ Pedestal, S-Video NTSC, SDI – PAL, or SDI - NTSC.</i> Note: SDI is optional and will not be selectable if SDI has not been licensed.
Audio Encoder	R/W	Desired mode of operation of the audio encoder is selected from the following values: <i>Off, NICAM STEREO, NICAM MONO, MPEG MP1 Stereo, MPEG MP1 Mono, MPEG MP2 Stereo or MPEG MP2 Mono.</i>
Audio Sample Rate	R/W	Desired sampling rate of the Audio signal is selected from the following values: For NICAM AUDIO: <i>32KHz/12bit, 32KHz/8bit, 16KHz/8bit and 8KHz/8bit.</i> For MPEG AUDIO: <i>48kHz</i>

6.1.3 Configuration Group



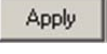

The Configuration Group consists of a pull down box, in which one of sixteen configurations can be selected, along with a *LOAD* button. To change the Configuration Group, select the desired configuration number in the *Target Configuration* drop-down list. Then click the *Load* button. This will update the configuration in the unit. In the Front Panel Control group

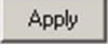
(located at the lowest right corner), there is a read only box, which shows current configuration.

The VETA transmitter can store (in memory) 16 configurations. These are pre-configured before leaving the factory but can be changed by the user. These 16 configurations are also set to match the receiver before leaving the factory.


Warning: If a configuration group is changed, it may not match the receiver configuration group and the digital link may no longer work. Keep in mind the receiver and transmitter configuration groups settings must match.

What you should know about configuration groups:

- Any field that is a read/write (R/W) can be, and is, stored in a configuration group.
- A group is selected by choosing one of the 16 groups and then clicking on the  button. This action loads all R/W fields (under any of the tabs or pull down menus, not just the  tab) with the stored values of that group.
- A group can be changed by editing an R/W field and then clicking on the  button (“APPLY” also automatically saves). All R/W field values (under any of the tabs or pull down menus, not just the  tab) are stored to the current configuration group (the current selected group).

For example, assume that current group 1 is selected and the existing *RF Frequency* is set at 2300 MHz. If the user wants to change the RF frequency to 2250 MHz, the user changes the *RF Frequency* field to 2250 and then clicks on the  button. The new frequency is automatically saved to the current group 1.

6.2 Video Settings Tab

This tab allows for various video parameters (see Figure 29) to be selected. It consists of a *Video Selections* section. The fields are explained in Table 4. Once again, you must click on the  button after new values have been selected in order for them to take effect.

Main Page	Video Settings	Audio Settings	Security	User Data	Special Setup	Transport Stream	Chaining
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Video Selections

Video Input	<input type="text" value="PAL"/>	Video Horizontal Resolution	<input type="text" value="528"/>
MPEG Mode	<input type="text" value="MPEG2"/>	Video Profile	<input type="text" value="4:2:0"/>
		GOP Length	<input type="text" value="0"/>

Figure 29 – Video Settings Tab

Video Selections

Video Input	<input type="text" value="OFF"/>	Video Horizontal Resolution	<input type="text" value="528"/>
MPEG Mode	<input type="text" value="MPEG4"/>	Video Profile	<input type="text" value="4:2:0"/>
MPEG4 Frame Rate	<input type="text" value="full"/>	GOP Length	<input type="text" value="0"/>
MPEG4 Video Sharpness	<input type="text" value="Normal"/>		
MPEG4 Encoding Option	<input type="text" value="low delay interlace"/>		

Figure 30 – MPEG4 Settings

Table 4 – Video Selections Field Definitions

Field	R/W	Description
Video Input	R/W	Desired video input format is selected from the following values: <i>PAL, NTSC w/ Pedestal, NTSC, S-Video PAL, S-Video NTSC w/ Pedestal, S-Video NTSC, SDI – PAL, or SDI - NTSC.</i> Note: SDI is optional and will not be selectable if SDI has not been licensed.

Field	R/W	Description
MPEG Mode	R/W	<i>MPEG2 or MPEG4.</i> This chooses the encoding when in NB only, DVB-T is always encoded MPEG2. MPEG4 is optional and must be licensed with 1.25MHz bandwidth
MPEG4 Frame Rate	R/W	<i>Full, 1/2, 1/4, 1/8, or 1/24.</i> This is only valid when RF Bandwidth is in NB mode and MPEG4 has been licensed. In some NB settings the video bit rate may be too low for clear pictures to be decoded, lowering the frame rate can help increase the picture clarity.
MPEG4 Video Sharpness	R/W	<i>Normal or Sharp.</i> Only valid when encoding MPEG4 when in NB mode. Sharpness is related to the clarity of detail and edge definition of an image. Encoding of video information may remove some higher frequency content in the original video information. The decoded information may appear smoothed and/or somewhat fuzzy when displayed. To improve video image quality additional algorithms might be implemented by setting this parameter to Sharp.
MPEG4 Encoding Option	R/W	The default is low delay interlace. Other modes are available, but advice should be sought before selection.
Video Horizontal Resolution	R/W	Desired Video Horizontal resolution is selected from the following values: <i>704, 528, 480, or 352. Default for NTSC is 704.</i> Changing the horizontal resolution to lower values will make the coded picture softer. Care should be taken to match the horizontal resolution to the resolution of the camera connected to the transmitter; this will give best image results.
Video Profile	R/W	Selects desired Video Profile: 4:2:0 or 4:2:2. 4:2:2 is optional and must be licensed in order to be selectable.
GOP Length	R/W	By default MPEG2 GOP length is set to a low delay stripe refresh mode (GOP = 0). This option allows the user to set the GOP length for a standard GOP structure at the expensive of an additional delay. Valid GOP values range from 1 – 15 (Where a value of 1 is intra mode only)

6.3 Audio Settings Tab


This tab allows for various audio parameters (see Figure 31, Figure 32, and Figure 33) to be selected. It consists of *Audio Selections* section. The fields are explained in Table 5 – Audio Selections Field Definitions. Once again, you must click on the  button after new values have been selected in order for them to take effect.

Table 5 – Audio Selections Field Definitions

Field	R/W	Description
Audio Encoder	R/W	Desired mode of operation of the audio encoder is selected from the following values: <i>Off, NICAM STEREO, NICAM MONO, MPEG MP1 Stereo, MPEG MP1 Mono, MPEG MP2 Stereo or MPEG MP2 Mono.</i>
Audio Sample Rate	R/W	Desired sampling rate of the Audio signal is selected from the following values: For NICAM AUDIO: 32KHz/12bit, 32KHz/8bit, 16KHz/8bit and 8KHz/8bit. For MPEG AUDIO: 48kHz
MPEG Audio Bit Rate	R/W	GMS recommends using 256kbps as a minimum to avoid distortion. This is not applicable when in NICAM audio encoder mode.
Audio Input Level	R/W	This control is used to define the audio gain to be applied to the audio input signal. 0dB is used for line level audio. 12dB, 24dB, 36dB and 48dB of gain can be applied for microphone inputs.
MPEG Audio Offset	R/W	Audio PTS offset when in MPEG audio compression. Default is 0



Figure 31 – Audio Encoder Off Settings

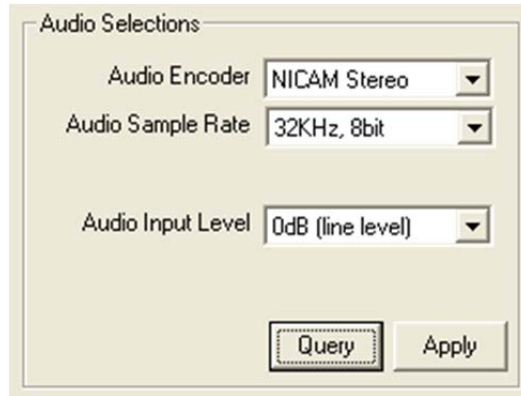


Figure 32 – Audio Encoder NICAM Settings

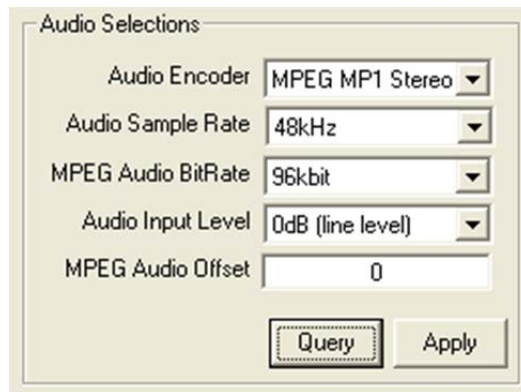


Figure 33 – Audio Encoder MPEG Settings


6.4 Security Tab

This tab allows administrator to enable or disable encryption, to choose type of encryption to be used and enter the encryption key; ABS (supplied with link) and optional AES or AES/B-crypt. AES and AES/B-crypt have 2 sub selections: 128 and 256. 128 requires 32 hex symbols for the Key, while type 256 is more secure and requires 64 hex symbols. If the transmitter in 128 or 256 modes, then the incoming signal can be decoded if the keys are matched or the incoming signal is not encrypted.

If encryption is turned OFF, then the Security Key window is displayed as shown in Figure 34.

The Scrambling Mode pull-down list shows all of the encryption modes. However if the unit does not have the corresponding license, it will return value that is licensed in the unit.

Security key field is different for different encryption modes. The modes that require 64 character key (AES, B-crypt) have to two boxes for lower and upper parts of the key. See Figure 35.

The user must enter the correct key, which must match the key of the receiver. Clicking on the  button will notify the user if the incorrect number of characters have been

entered. The user will not be able to exit this window unless the button is clicked or the correct amount of characters are entered.

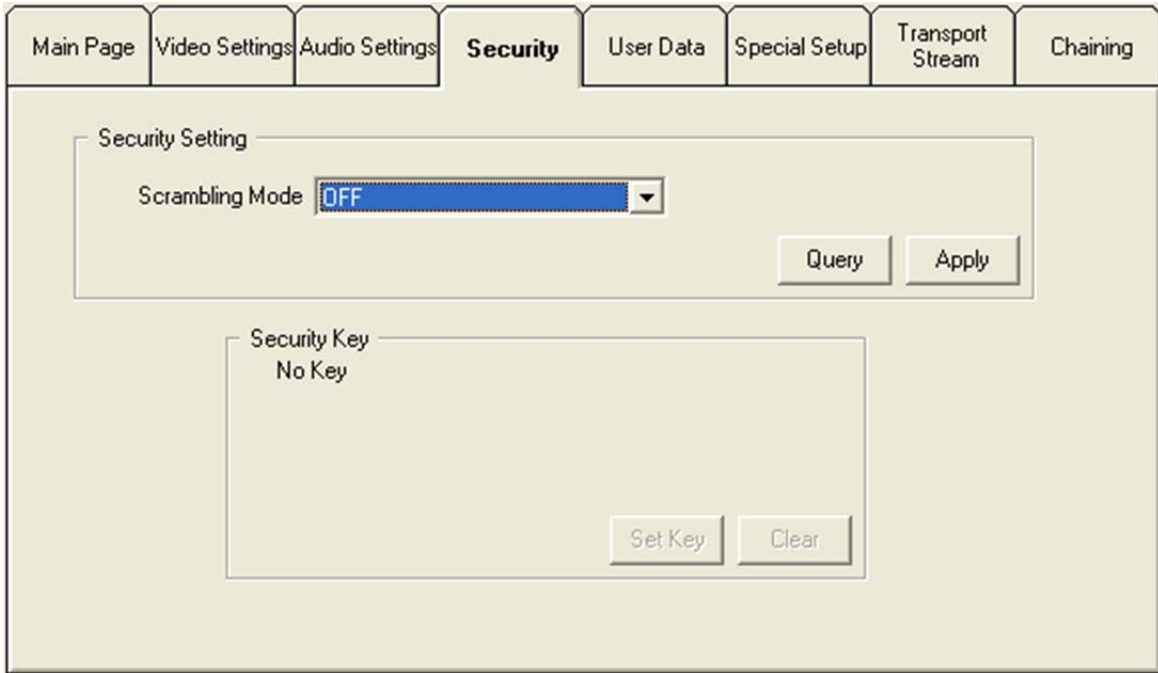


Figure 34 – Security Tab

Table 6 – Encryption Field Definitions

Field	R/W	Description
Descrambling Mode	R/W	This field allows user to select between OFF, ABS, AES 128, AES 256, AES /Bcrypt 128, or AES/Bcrypt 256. (AES 128, AES 256, AES /Bcrypt 128, and AES/Bcrypt 256 are optional).
Security Key	W	When any scrambling option is selected, the user is prompted to enter an encryption key. The difference between scrambling modes is the length of the key measured in characters: 8 for ABS, 32 for AES/BCRYPT128, or 32 upper and lower (64 characters total) for AES/BCRYPT256. For security purposes, the Security Key cannot be read back from any GMS product.

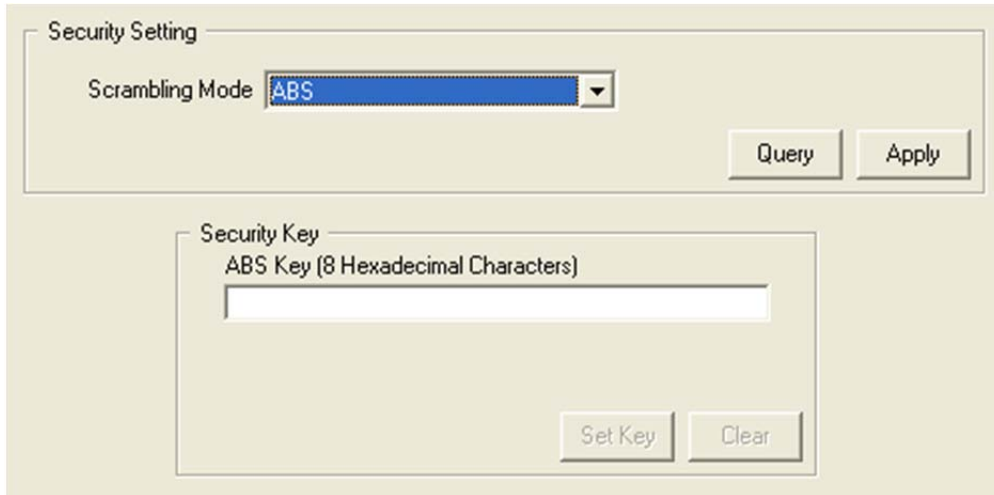


Figure 35 – Security Tab in ABS Mode

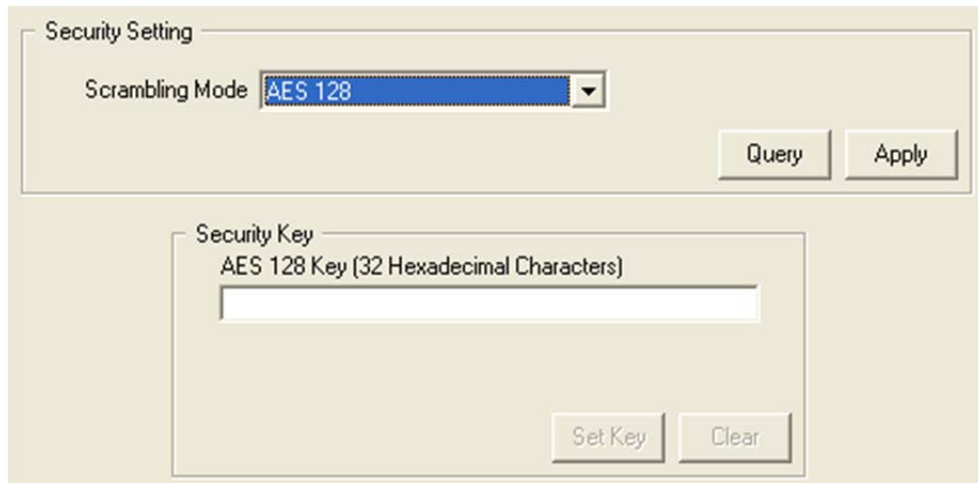


Figure 36 – Security Tab in AES 128 Mode

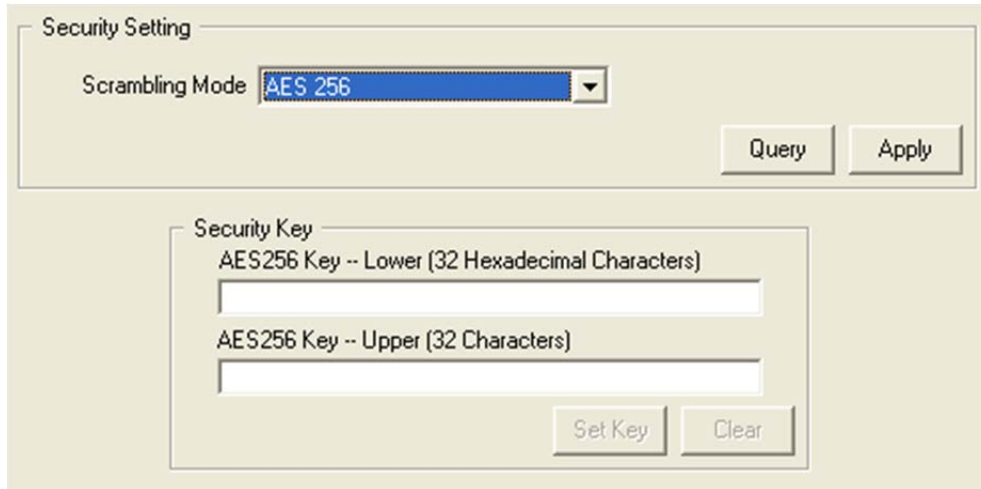


Figure 37 – Security Tab in AES 256 Mode

6.5 User Data Tab

This tab (see Figure 38) allows the administrator to turn USER DATA ON or OFF. If turned ON, the transmitter injects any User Data into the transmitted stream. Refer to the corresponding transmitter’s operations manual for data inputs.

Table 7 – User Data Field Definitions

Field	R/W	Description
User Data	R/W	This field allows user to select between <i>ON</i> & <i>OFF</i> values. When the control is set to ON, the user can introduce RS232 data to the data input port of the receiver.
Input Data Baud Rate	R/W	This field specifies the baud rate of the RS232 data component. It can be set to 1200, 2400, 4800, 9600, 19200, 38400, or 57600 baud.

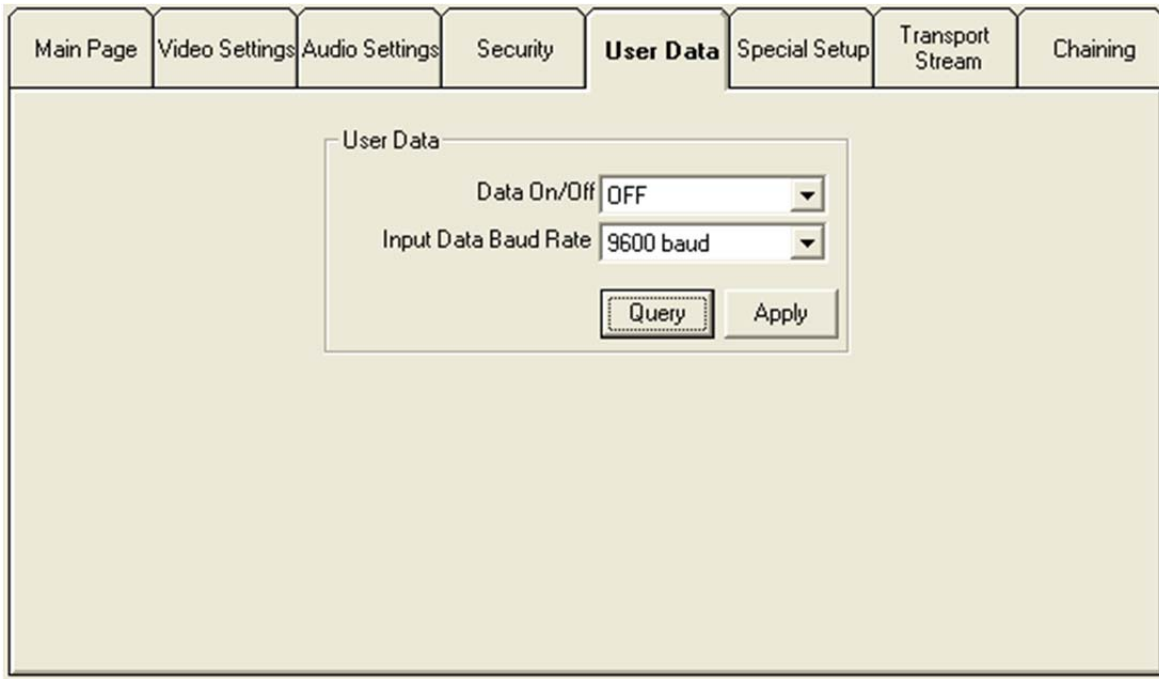


Figure 38 – User Data Tab

6.6 Special Setup Tab

Special Setup is configured at the factory for specific application and for advanced operations only. Consult GMS before changing any of these parameters.

This selection brings up special parameters (see Figure 39). Selections are described in Table 8.

Main Page	Video Settings	Audio Settings	Security	User Data	Special Setup	Transport Stream	Chaining
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Special Setup

High Power Output PAD dB (1 dB Step)

Low Power Output PAD dB (0.25 dB Step)

Sleep Mode

Sleep If No Video Lock

Audio 2 Enable

Figure 39 – Special Setup for VMT

Main Page	Video Settings	Audio Settings	Security	User Data	Special Setup	Transport Stream	Chaining
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Special Setup

Medium High Power Output PAD dB (1 dB Step)

Medium Low Power Output PAD dB (0.25 dB Step)

Low Power Output PAD dB (0.25 dB Step)

Sleep Mode

Sleep If No Video Lock

Figure 40 – Special Setup for VT

Table 8 – Special Setup Field Definitions

Field	R/W	Description
High Power Output PAD	R/W	VMT only The High power PAD adds additional attenuation onto the nominal Full power output. This can be used to lower the maximum power out of the VMT. The Default value is 0dB but, the value can be entered in 0.25dB steps to 31.75dB maximum. This value must be less than the Low Power Output PAD value.
Medium High Power Output PAD	R/W	VT only
Medium Low Power Output PAD	R/W	VT only
Low Power Output PAD	R/W	This value determines the Power output of the transmitter when in Low Power Mode. The Default value is 32dB but the value can be entered in 0.25dB steps to 0.25dB minimum. This value must be higher than the High Power Output PAD value.
Sleep Mode	R/W	Selectable <i>Yes or No</i> . Putting the VMT in sleep mode will disable all functionality except the communication between the VMT and the RS232 control. This is the lowest current usage mode of the transmitter (besides turning the unit off).
Sleep If No Video Lock	R/W	<i>Normal, or Sleep when no Video</i> . Default is normal, when in Sleep if no Video, the transmitter will be placed in sleep mode when no video is input to the Transmitter.
Audio 2 Enable	R/W	<i>Disabled or Enabled</i> . Function enables 2 nd set of single ended audio.

6.7 Transport Stream Tab

The Transport Stream Tab contains information about the transport stream and allows the user to make changes to these parameters. The Transport Stream Settings Tab is shown in Figure 41 and Figure 42.

Keep in mind you must click on the  button in order for new values to take effect.

Not that the ID and PID values can be returned to their default values (see Table 10) by entering in a value of '0' (And clicking Apply).

Main Page	Video Settings	Audio Settings	Security	User Data	Special Setup	Transport Stream	Chaining
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Transport Stream Setup

Narrow Band Service Name	<input type="text" value="Solo-01"/>		PCR PID	<input type="text" value="0x1FFE"/>
DVB-T Service Name	<input type="text" value="Unit 1"/>		PMT PID	<input type="text" value="0x0000"/>
Provider Name	<input type="text"/>		Video PID	<input type="text" value="0x012C"/>
Video Stream ID	<input type="text" value="0x0000"/>		Data PID	<input type="text" value="0x0064"/>
Audio Stream ID	<input type="text" value="0x0000"/>		Audio PID 1	<input type="text" value="0x00C8"/>
Transport Stream Version	<input type="text" value="0x0000"/>		Audio PID 2	<input type="text" value="0x01F4"/>

Figure 41 – Transport Stream for VMT

Main Page	Video Settings	Audio Settings	Security	User Data	Special Setup	Transport Stream	Chaining
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Transport Stream Setup

Narrow Band Service Name	<input type="text" value="Solo-01"/>		PCR PID	<input type="text" value="0x1FFE"/>
DVB-T Service Name	<input type="text" value="Unit 1"/>		PMT PID	<input type="text" value="0x0020"/>
			Video PID	<input type="text" value="0x012C"/>
			Data PID	<input type="text" value="0x0064"/>
			Audio PID	<input type="text" value="0x00C8"/>

Figure 42 – Transport Stream for VT

See Table 9 for an explanation the fields.

Table 9 – Transport Stream Field Definitions

Field	R/W	Description
Narrow Band Service Name	R/W	Allows for a unique service name to be applied to the Transmitter while broadcasting in Narrow Band Mode
DVB-T Service Name	R/W	Allows for a unique service name to be applied to the Transmitter while broadcasting in DVB-T Mode
Provider Name	R/W	(VMT Only) User can enter a provider name for the Transmitter
Video Stream ID	R/W	(VMT Only) User can set these to specific values or keep the default.
Audio Stream ID	R/W	(VMT Only) User can set these to specific values or keep the default.
Transport Stream Version	R/W	(VMT Only) User can set these to specific values or keep the default.
PCR PID	R/W	User can set these to specific values or keep the default.
PMT PID	R/W	User can set these to specific values or keep the default.
Video PID	R/W	User can set these to specific values or keep the default.
Data PID	R/W	User can set these to specific values or keep the default.
Audio PID	R/W	(VT Only) User can set these to specific values or keep the default.
Audio PID 1	R/W	(VMT Only) User can set these to specific values or keep the default.
Audio PID 2	R/W	(VMT Only) User can set these to specific values or keep the default.

Table 10 – Default PID Definitions

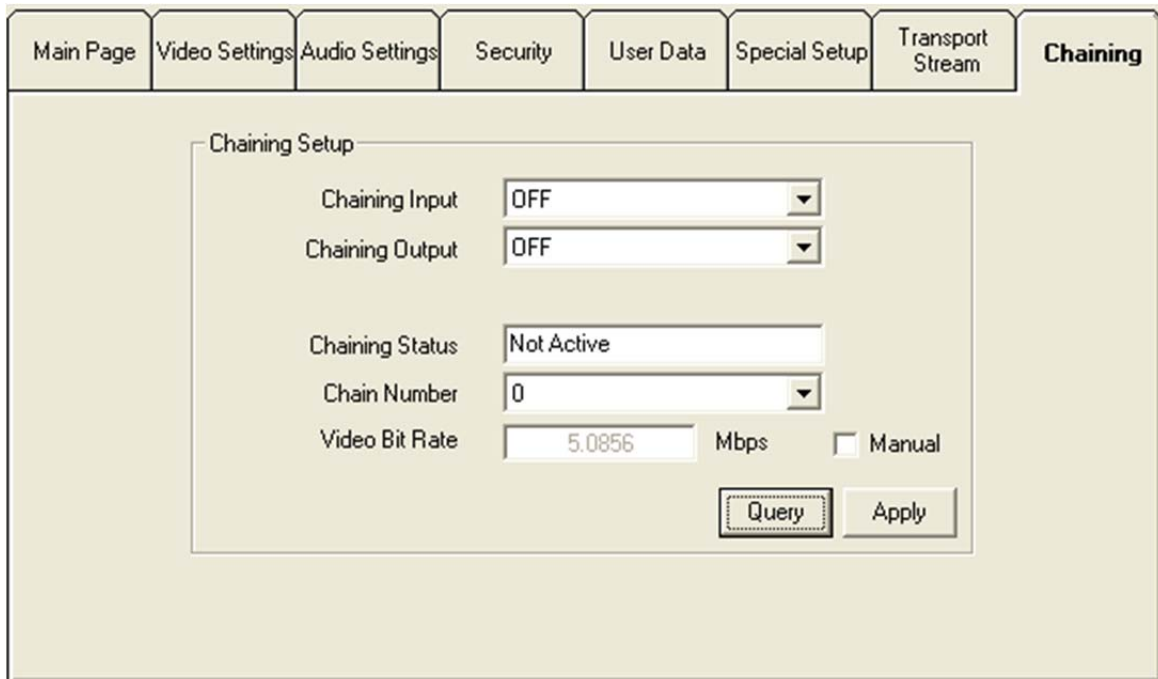
Chain Number	PMT PID	Video PID	Audio PID	Data PID	PCR PID
0	0x0020	0x012C	0x00C8	0x0064	0x1FFE
1	0x0021	0x012D	0x00C9	0x0065	0x1FFD
2	0x0022	0x012E	0x00CA	0x0066	0x1FFC
3	0x0023	0x012F	0x00CB	0x0067	0x1FFB
4	0x0024	0x0130	0x00CC	0x0068	0x1FFA
5	0x0025	0x0131	0x00CD	0x0069	0x1FF9
6	0x0026	0x0132	0x00CE	0x006A	0x1FF8

Chain Number	PMT PID	Video PID	Audio PID	Data PID	PCR PID
7	0x0027	0x0133	0x00CF	0x006B	0x1FF7
8	0x0028	0x0134	0x00D0	0x006C	0x1FF6
9	0x0029	0x0135	0x00D1	0x006D	0x1FF5

6.8 Chaining Tab

This tab allows for customization of the chaining feature within the VETA transmitters. Chaining Input allows the user to set the Tx to act as a relay or to allow multiplexing of transport streams within one Tx. The chaining out feature outputs the transport stream of the Tx to the 'Chaining out' interface.

Keep in mind you must click on the  button in order for new values to take effect.



The screenshot shows the 'Chaining' configuration page. At the top, there is a navigation bar with tabs for 'Main Page', 'Video Settings', 'Audio Settings', 'Security', 'User Data', 'Special Setup', 'Transport Stream', and 'Chaining'. The 'Chaining' tab is selected. Below the navigation bar is the 'Chaining Setup' section, which contains the following fields and controls:

- Chaining Input:** A dropdown menu set to 'OFF'.
- Chaining Output:** A dropdown menu set to 'OFF'.
- Chaining Status:** A text field displaying 'Not Active'.
- Chain Number:** A dropdown menu set to '0'.
- Video Bit Rate:** A text field displaying '5.0856' followed by 'Mbps' and an unchecked 'Manual' checkbox.
- Buttons:** 'Query' and 'Apply' buttons are located at the bottom right of the Chaining Setup section.

Figure 43 – Chaining for VT

Chaining Setup

Chaining Input: OFF

Chaining Output: OFF

Transport Stream Control: Chaining in, ASI out

Chaining Status: Not Active

Chain Number: 0

Video Bit Rate: 0.0000 Mbps Manual

Query Apply

Figure 44 – Chaining for VMT

Chaining Setup

Chaining Input: OFF

Chaining Output: OFF

Transport Stream Control: Chaining in, ASI out

Chaining Status: Not Active

Chain Number: 0

Video Bit Rate: 0.0000 Mbps Manual

Query Apply

Figure 45 – Chaining for VMT – Manual Video Bit Rate

Table 11 – Chaining Setup Field Definitions

Field	R/W	Description
Chaining Input	R/W	OFF, ON or Relay. Off is when using the transmitter as a standard transmitter. Relay is used for purely repeater applications. One will notice that Video Input, Audio Encoder and Data ON/OFF are all set to OFF automatically once RELAY is set. ON is used to multiplex an additional digital stream onto the RF channel. This has the affect of dividing the channel rate equally between the chaining interface and the local video/audio/user data to be sent over the RF link.
Chaining Output	R/W	OFF or ON. This will stream the encoded digital stream out of the Chaining Port
Transport Stream Control	R/W	VMT Only This field is reserved for future expansion. This should be set to Chaining In, Chaining Out.

Field	R/W	Description
Chaining Status	R/W	<i>Active or Not Active.</i> Chaining Status will register whether a valid chain is input to the VMT, this is only activated when the Chaining Input is set to <i>ON or Relay</i> .
Chain Number	R/W	<i>Selectable from 0-9.</i> When multiplexing multiple digital streams, each stream must have a unique chain number. This is used to prevent SI table overlaps between the digital streams.
Video Bit Rate	R/W	This shows the amount of RF channel rate allocated to the local Tx Video Source. This number will divide by two once the Chaining Input is set to <i>On</i> , meaning half of the RF channel is now reserved for the Chaining input. The video bit rate will go to 0.00, when the Chaining Input is set to <i>Relay</i> , meaning all the RF channel is reserved for the Chaining Input Care should be taken if user chooses to manually set the video bit rate for the local video input as this will change the allocation of the channel rate.

7. Default Configurations

Table 12 – Typical VT Default Configurations File

PARAMETER	CONFIGURATIONS							
Config #	1	2	3	4	5	6	7	8
Device Address	1	1	1	1	1	1	1	1
COFDM BW	2.5Mhz	8Mhz	8Mhz	8Mhz	8Mhz	8Mhz	8Mhz	8Mhz
RF Frequency	2250	2260	2255	2265	2205	2215	2255	2265
Output Mode	ON	ON	ON	ON	ON	ON	ON	ON
COFDM Mode	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
Modulation GI	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
Modulation FEC	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
NB Modulation GI	1/8	1/8	1/16	1/8	1/16	1/8	1/16	1/8
NB Modulation FEC	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3
Sp Inversion	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Output Power Level	Full	Full	Full	Full	Full	Full	Full	Full
Video Input	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC
Audio Encoder	Mpeg Stereo	Mpeg Stereo	Mpeg Stereo	Mpeg Stereo	Mpeg Stereo	Mpeg Stereo	Mpeg Stereo	Mpeg Stereo
Audio Sample Rate	48KHz	48KHz	48KHz	48KHz	48KHz	48KHz	48KHz	48KHz
Audio Input	0dB	0dB	0dB	0dB	0dB	0dB	0dB	0dB
Data ON/OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Input Data Rate	9600	9600	9600	9600	9600	9600	9600	9600
Scrambling	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Chaining	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Medium High	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
Medium Low	6	6	6	6	6	6	6	6
Low	32	32	32	32	32	32	32	32
Horizontal resolution	704	704	704	704	704	704	704	704
Sleep Mode	No	No	No	No	No	No	No	No
Sleep in no Video	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Front Panel Lock	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked
MPEG Mode *	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2
MPEG4 Frame Rate **	Full	Full	Full	Full	Full	Full	Full	Full
Sharpness	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Encoding Option	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog

*Select MPEG4 only for Narrowband

**Select Full Rate only for Low Delay Encoding

Table 13 – Typical VMT Default Configurations File for LS-Band

PARAMETER	CONFIGURATIONS															
Config #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Device Address	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
COFDM BW	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz
RF Frequency	1760	1800	1840	2205	2225	2245	2265	2285	2295	2305	2315	2325	2345	2365	2385	2395
Output Mode	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
DVB-T COFDM Mode	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
DVB-T Modulation GI	1/8	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
DVB-T Modulation FEC	2/3	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
NB COFDM Mode	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
NB Modulation GI	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
NB Modulation FEC	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
Sp Inversion	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Output Power Level	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
Video Input	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC
Audio Encoder	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo
MPEG Audio Sample Rate	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit
Audio Input Gain	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB	36dB
Auxiliary Data ON/OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Input Data Rate	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600

PARAMETER	CONFIGURATIONS															
Config #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Scrambling	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Chaining Input	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Chaining Output	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Chain Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transport Stream Control	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT
Output Attenuation: High Power	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Output Attenuation: Low Power	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Horizontal resolution	704	704	704	704	704	704	704	704	704	704	704	704	704	704	704	704
Sleep Mode	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Sleep in no Video	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Front Panel Lock	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked
MPEG Mode *	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2
MPEG4 Frame Rate **	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
Sharpness	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Encoding Option	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog

*Select MPEG4 only for Narrowband

**Select Full Rate only for Low Delay Encoding

Table 14 – Typical VMT Default Configurations File for CB-Band

PARAMETER	CONFIGURATIONS															
Config #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Device Address	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
COFDM BW	6MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz	8MHz
RF Frequency	4405	4415	4425	4435	4445	4455	4465	4475	4485	4495	4505	4515	4525	4535	4545	4555
Output Mode	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
DVB-T COFDM Mode	64QAM	16QAM	16QAM	QPSK	16QAM	64QAM	16QAM	64QAM	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
DVB-T Modulation GI	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
DVB-T Modulation FEC	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
NB COFDM Mode	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
NB Modulation GI	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
NB Modulation FEC	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3
Sp Inversion	Normal	Inverted	Normal	Inverted	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Output Power Level	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
Video Input	NTSC	OFF	OFF	PAL	PAL S-vid	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC
Audio Encoder	NICA M, 32kHz, 8cbit, Stereo	MPEG, 32kHz, Mono	MPEG, 48kHz, Stereo	NICA M, 8kHz, 8cbit, Stereo	NICA M, 16kHz, 8cbit, Mono	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo	MPEG, 48kHz, Stereo
MPEG Audio Sample Rate	64kbit	320kbit	192kbit	96kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit	256kbit
Audio Input Gain	0dB	12dB	24dB	36dB	48dB	0dB	0dB	0dB	0dB	0dB	0dB	0dB	0dB	0dB	0dB	0dB
Auxiliary Data ON/OFF	ON	Even	OFF	Odd	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Input Data Rate	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600	9600
Scrambling	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

PARAMETER	CONFIGURATIONS															
Config #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Chaining Input	ON	ON	Relay	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Chaining Output	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Chain Number	0	1	5	9	7	0	0	0	0	0	0	0	0	0	0	0
Transport Stream Control	Chain IN / Chain OUT	ASI IN / Chain OUT	Chain IN / ASI OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT	Chain IN / Chain OUT
Output Attenuation: High Power	0.25	0.9	5.5	9.25	12.5	20.25	21.5	25.75	0	0	0	0	0	0	0	0
Output Attenuation: Low Power	3.25	6.5	9	12.5	15	23	30.2	31.5	32	32	32	32	32	32	32	32
Horizontal resolution	704	704	704	704	704	704	704	704	704	704	704	704	704	704	704	704
Sleep Mode	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Sleep in no Video	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Front Panel Lock	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked	Unlocked
MPEG Mode *	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2	MPEG 2
MPEG4 Frame Rate **	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
Sharpness	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Encoding Option	Low Delay Int	Standard Delay Int	Low Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog	Standard Delay Prog

*Select MPEG4 only for Narrowband

**Select Full Rate only for Low Delay Encoding