



AdvancedDigital Inc.

TO BE BETTER OR TO BE DIFFERENT

# LUMANTEK

# VENTUS 1.0

All in One USB Type of DTV / Mobile TV Signal Generator

- ATSC-Mobile
- CMMB
- DTMB
- DVB-T/H
- DVB-C
- OpenCable
- ATSC
- T-DMB / DAB+
- ISDB-T





All in One USB Type of DTV / Mobile TV Signal Generator

Mobility  
+  
Upgradable

Design your own Hi-END what you need



## Overview

The digital streaming DTV/Mobile TV modulator with USB connection have ability to stream an MPEG stream from hard disk and output an industry-standard 50-870MHz (VHF + UHF) RF signal. The on-board synthesizer can generate a stable and accurate symbol clock and tuning frequency. The Transport Stream can be supplied via an external USB2.0 interface, and full customer-selectable modulation adjusted to exactly what customers need. And can be upgradable other modulation without hardware Factory return, but in the way of simple on-line proceeds, if purchase license update

Moreover, VHF and UHF mode RF AMP and step attenuator have ability to amplify professional quality RF level +10 dBm to -110 dBm range. The professional range of RF power controlling should be very much ideal for adjacent selective, Min/Max level of RF Sensitive Testing.

The USB modulator is fully hard-ware base of FPGA design solution, that can be enough to use with even low performance laptop PC on low CPU share Usage, and easy carry for field test, and your product demonstration.

## Features

- USB 2.0 Platform Base Frame (DVB-ASI Output & Input)
- T-DMB / DAB+ modulation option
- OFDM (DVB-T/DVB-H) modulation option
- ISDB-T/B modulation option
- QAM (DVB-C/ITU-T J83 Annex B) modulation option
- OFDM (T-DMB/DAB) modulation option
- ATSC (8VSB) modulation option
- CMMB modulation + Multiplex frame modulation option
- OpenCable modulation option
- DTMB modulation option
- Real time ASI INPUT to RF OUTPUT modulation option
- AWGN - white Noise Generation
- MPEG2 - TS Recording & Analyzing (Program / PID) / Bit stuffing ability
- On-board VHF/UHF RF output up-converter at level -20dBm (1Hz step Agile Type) basic
- RF Level Accuracy : <+/- 1dB
- AMP & RF Step Attenuators for professional RF level test - RF output from +10 dBm to -110 dBm (0.1dB steps) option
- Temperature compensation using an integrated temperature sensor, enable to heater control without RF level loss

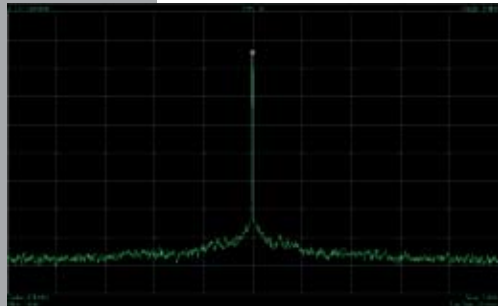
CW MODE

DVB-ASI OUTPUT (BASE FRAME)

DVB-ASI (OUTPUT)	Parameter	Value
	Buffer	8 MB
	Connector type	BNC (75Ω)
	Output Bitrate	~ 108 Mbps

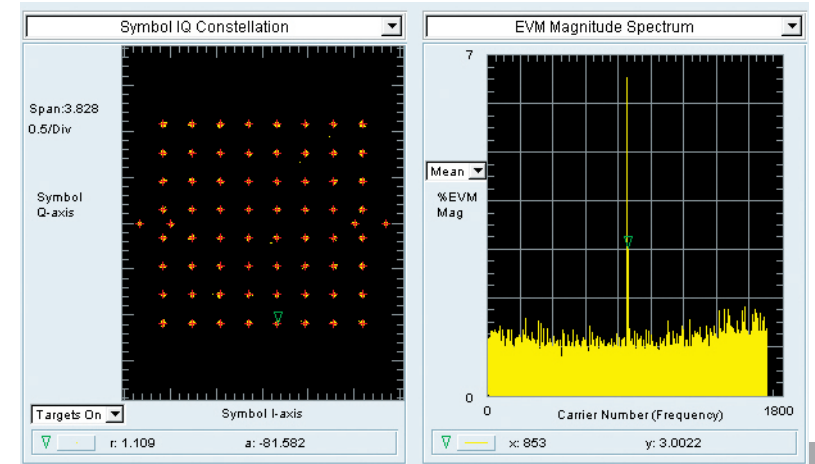
DVB-ASI INPUT (BASE FRAME)

DVB-ASI (INPUT)	Parameter	Value
	Buffer	8 MB
	Connector type	BNC (75Ω)
	Input Bitrate	~ 108 Mbps



VHF/UHF RF ATTENUATOR (OPTIONAL)

Item	Unit	Min.	Type	Max.
Input Range	dBm	—	-20	—
Output Control Range	dBm	-110		+10
Output Control Step	dB		0.1	
Frequency Control Range	MHz	50		870
Frequency Control Step	Hz		1	
Valid Temperature	Celsius (°C)	25	38	60
Power Supply Voltage	V		12V	
Power Supply Current	mA		640	1,000



DVB-T/H MODE

DVB-T/H MODULATOR SPECIFICATION (OPTIONAL)

Modulation	Modulation Mode	QPSK, 16 QAM, 64 QAM
	Transmission Mode	2K, 4K, 8K
	Channel bandwidth	5, 6, 7, 8 MHz
	Convolution Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
	Guard Interval	1/4, 1/8, 1/16, 1/32
RF OUT	Frequency range	50 ~ 870 MHz
	Channel bandwidth	5, 6, 7, 8 Mhz
	Output Impedance	50 Ω
	RF Output Level	-20 dBm (-110dBm ~ +10dBm)
	Return Ross	>15 dB
	Spurious	>60 dB
	Phaser Noise	-95 dBc @10 KHz
	Connector Type	SMA (50Ω)
RF Level Accuracy	<+/- 1dB	

### CMMB(STiMi) MODULATION SPECIFICATION (OPTIONAL)

Modulation + Multiplex Frame	Modulation Mode	CMMB(STiMi)
	Compliant	CMMB GY/T220. 1/2006 and GY/T 220.2/2006
	Support	Logical Channel Setting
	Byte Interleave Mode	Mode 1, Mode 2, Mode 3
	RS Coding	(240, 240), (240,224), (240,192), (240, 176)
	Constellation	BPSK, QPSK, 16QAM
	LDPC Bitrate	1/2, 3/4
	Signal Bandwidth	8 MHz
RF OUT	Frequency Range	(Full VHF-UHF 50 ~ 870 MHz) S/L-Band external RF Adopter Device
	Real Time Level Attenuation	Yes
	Output Impedance	50Ω
	RF Output Level	-20 dBm
	Return Loss	>15dB
	Spurious	>55 dB
	Phaser Noise	<-95dBc @ 10KHz Offset
	Connector Type	SMA (50Ω)
RF Level Accuracy	<+/-1dB	

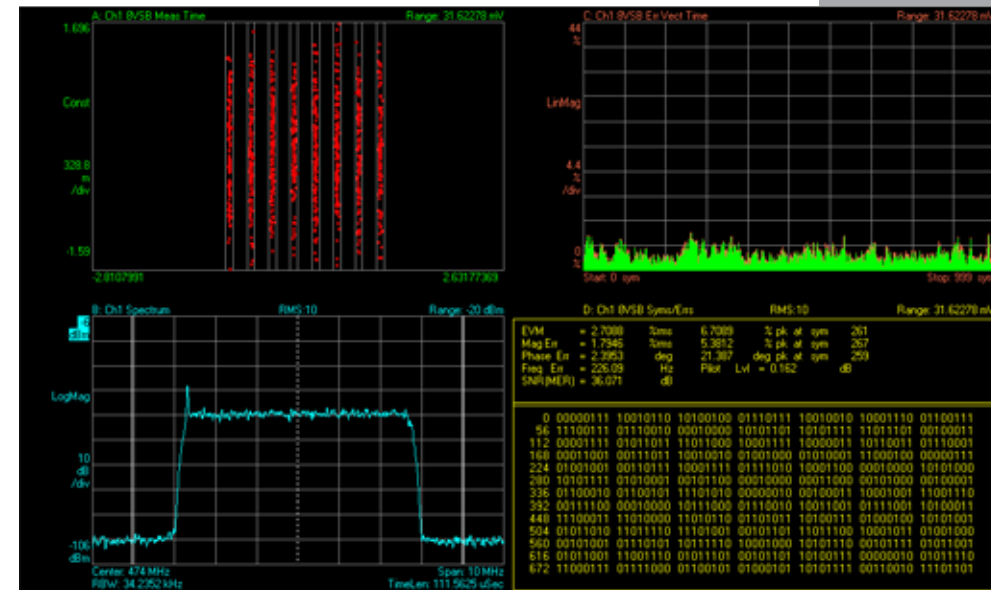
### ATSC MODULATOR SPECIFICATION (OPTIONAL)

Modulation	Modulation Mode	8-SVB
	Symbol Rate	10.76 Ms/s
RF Out	Frequency range	50 ~ 870 MHz
	Channel bandwidth	6 MHz
	RF Output Level	-20 dBm (-110dBm ~ +10dBm)
	Return Ross	>15 dB
	Spurious	>60 dB
	Phaser Noise	-95 dBc @10KHz offset
	Connector Type	SMA (50Ω)
	RF Level Accuracy	<+/-1dB

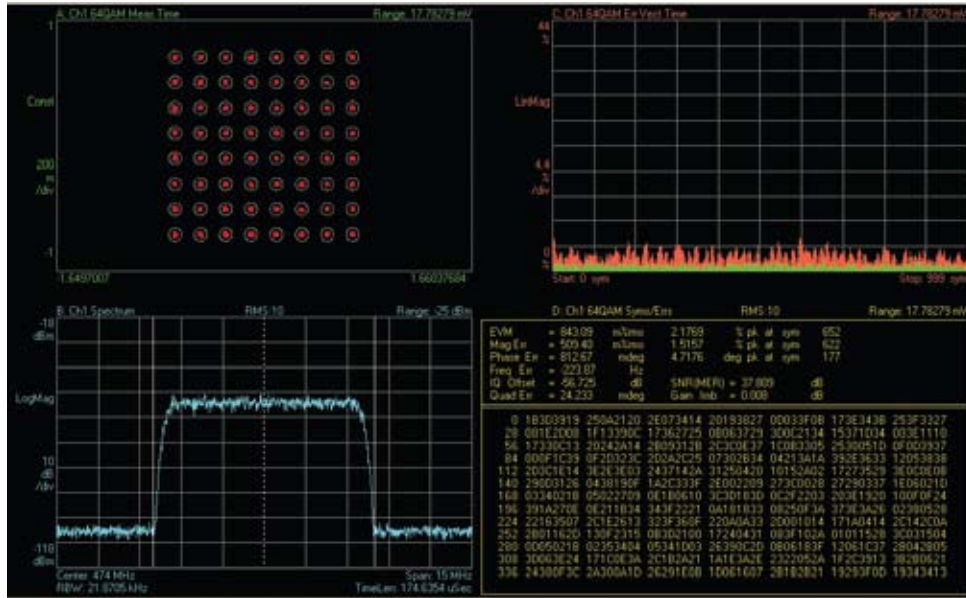
### OPENCABLE MODULATOR SPECIFICATION (OPTIONAL)

Modulation	Modulation Mode	Annex B (QAM 64, 256)
	Symbol Rate	5.057 or 5.38 Ms/s
	Channel Bandwidth	ITU-T J83 FEC Annex B Channel bandwidth : 6, 7, 8 MHz
RF Out	Frequency range	50 ~ 870 MHz
	Channel bandwidth	6, 7, 8 Mhz
	RF Output Level	-20 dBm (-110dBm ~ +10dBm)
	Output Impedance	75 Ω
	Return Ross	>15 dB
	Spurious	>60 dB
	Phaser Noise	-95 dBc @10KHz offset
Connector Type	SMA (50Ω)	
RF Level Accuracy	<+/-1dB	

ATSC MODE



## DVB-C 64 QAM MODE

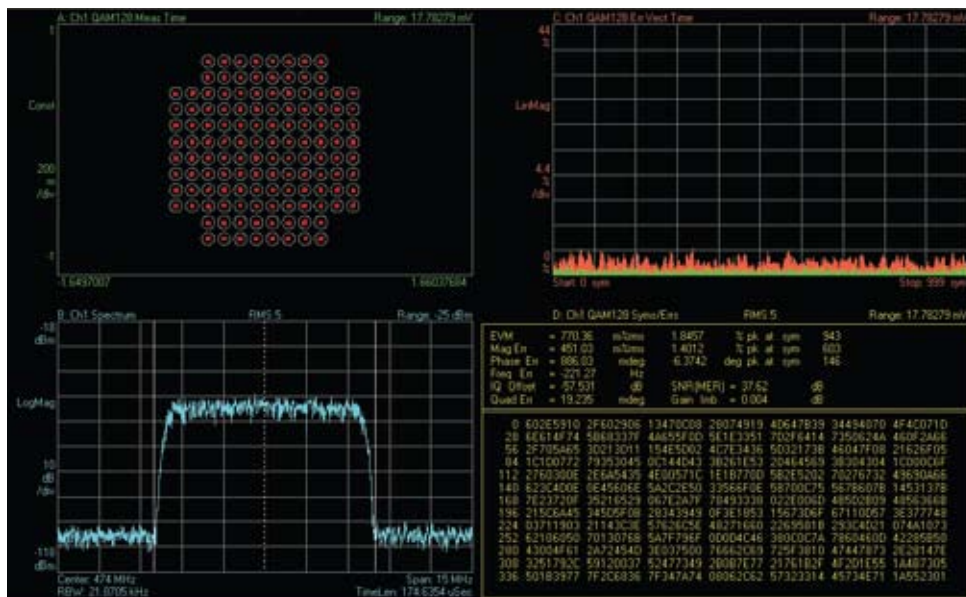


## DVB-C MODULATOR SPECIFICATION (OPTIONAL)

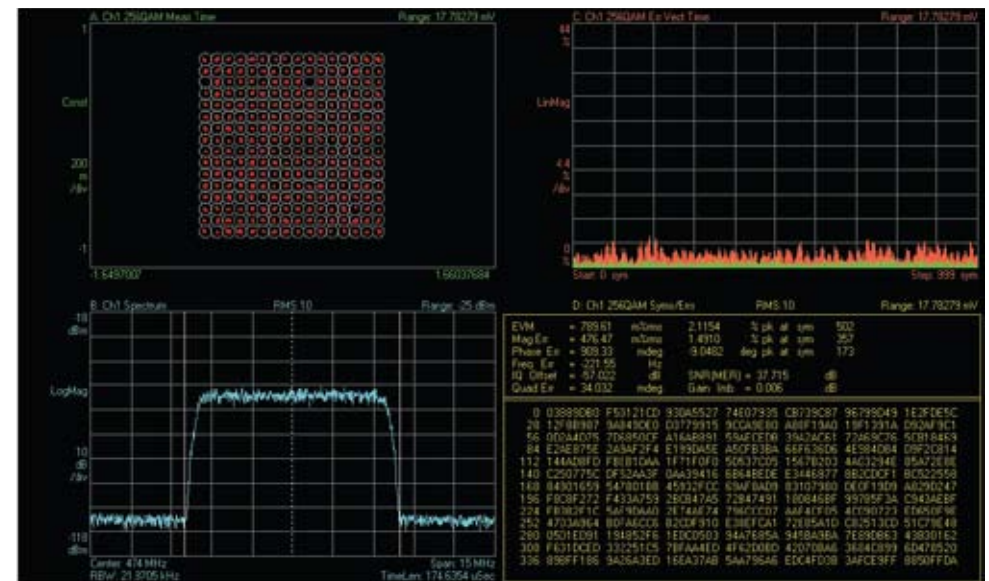
Modulation	Modulation Mode	Annex A/C (QAM 16, 32, 64, 128, 256)
	Symbol Rate	~ 10 Ms/s
	Channel Bandwidth	ITU-T J83 FEC Annex A/C Channel bandwidth : 6, 7, 8 MHz
RF Out	Frequency range	50 ~ 870 MHz
	Channel bandwidth	6, 7, 8 Mhz
	RF Output Level	-20 dBm (-110dBm ~ +10dBm)
	Output Impedance	75 Ω
	Return Loss	> 15 dB
	Spurious	>60 dB
	Phaser Noise	-95 dBc@10KHz offset
Connector Type	SMA (50Ω)	
RF Level Accuracy	< +/- 1dB	

➤ RF QUALITY MEASURED BY VECTOR SCOPE ANALYZER

## DVB-C 128 QAM MODE



## DVB-C 256 QAM MODE





## T-PUMP APPLICATION

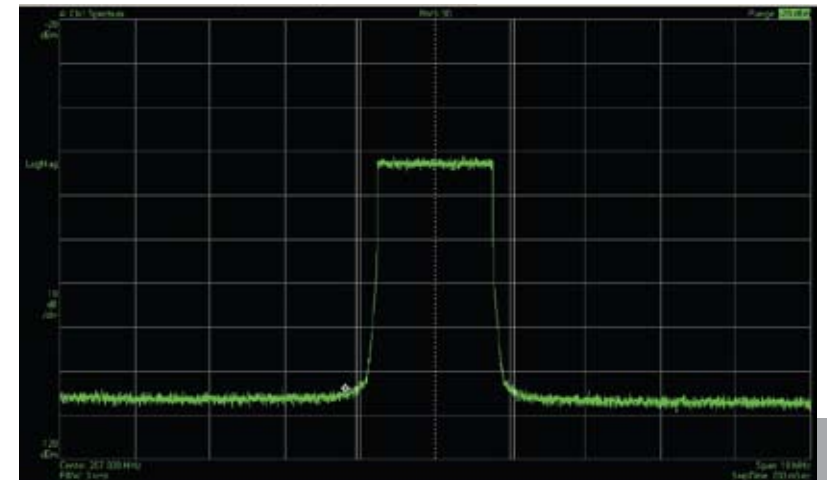


## ISDB-T/T MODULATION SPECIFICATION (OPTIONAL)

Modulation	Modulation Mode	ISDB-T Layered OFDM,
	Compliant	ARIB STD-B31
	Support	Japan ISDB-T & Brazilian SBTVD
	TMCC Encoding	Fully Supported
	Segment	1 Seg & full Seg Supported
RF OUT	Frequency Range	50 ~ 870 Mhz
	Real Time Level Attenuation	Yes
	Output Impedance	50 $\Omega$
	RF Output Level	-20 dBm (-110dBm ~ +10dBm)
	Return Loss	> 15 dB
	Spurious	> 55 dB
	Phaser Noise	<- 95 dBc @10KHz offset
	Connector Type	SMA ( 50 $\Omega$ )
RF Level Accuracy	<+/- 1dB	

## T-DMB/DAB+ MODULATION SPECIFICATION (OPTIONAL)

Modulation	Modulation Mode	OFDM / D-QPSK
	Compliant	EN 300 401
	Support	TM1, TM2, TM3, TM4 In Band III
	Reconfiguration Test	Dynamic Reconfiguration Support
	ET1 Pattern Supported	Slide Show, BIFS, DAB+, BWS, TPEG, Visual Radio, China DMB ( H.264 + AAC3 ) ET1
RF OUT	Frequency Range	Band II ( 87.5 MHz~ 108 MHz ) BAND III ( 174 MHz ~ 250 MHz ) L-Band Option ( 1.452 ~ 1.492 MHz )
	Real Time Level Attenuation	Yes ( + 10 ~ - 110 dBm in 0.1 dB step )
	Output Impedance	50 $\Omega$
	RF Output Level	-20 dBm (-110dBm ~ +10dBm)
	Return Loss	> 15 dB
	Spurious	> 55 dB
	Phaser Noise	<- 95 dBc @10KHz offset
	Connector Type	SMA ( 50 $\Omega$ )
	RF Level Accuracy	<+/- 1dB



T-DMB / DAB MODE



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