

Digital Video/Mobile TV Test Suit



DTX2000 >



Overview

DTX2000 is a **multi-standard Digital Video & Mobile TV signal generator** that supports simulating digital TV transmission signals for R&D and mass-production in one unit. It can cover all common Digital Video Broadcasting standard including DVB-T, DVB-C, DVB-S/S2, DVB-H, ATSC, OpenCable, DTMB(DMB-TH), ISDB-T, SBTVD and ADTB-T.

Digital Video Broadcasting environment evolves into more complex systems continuously that need to test new and updated standards. For this purpose, DTX2000 presents high-quality RF modulator & up-converter, Transport Stream generator, TS checker and ETR290 Jitter Generator in one unit. It'll make cost-worthy, efficient and easily expandable test environment for manufacturers who should test against changing DTV/Mobile TV standards for digital media products.

Key Features

- Supports all common DTV/Mobile TV Standards
- TS Generator Module (ASI output)
- High Quality RF Modulator & Upconverter
- TS Checker
- A/V Decoding
- TR101 290 Jitter Injection
- Analogue I/Q interface for interoperability
- AWGN/Fading Simulation
- Live Signal Capture module
- BER Test

Intended Applications

- Digital TV receiver Design and Manufacturing Test
- Set-top Box / DTV(LCD, PDP) Manufacturing
- Set-top Box / DTV Development and Performance Verification
- Stream Play-out and Recording for Production Line
- Simulation of Digital TV (Terrestrial/Satellite/Cable) & Mobile TV Signal transmission
- Broadcasting Transmission
- DTV Chip Development (Tuner/MPEG)



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Features

General Characteristics

- Modulator : Multi Standard from separated modular concept
(Option : DVB-T, DVB-C, ATSC, OpenCable , DVB-S/S2, DTMB(DMB-TH), ISDB-T, SBTVD, DVB-H, ADTB-T)
- RF Upconverter : 50 ~ 870MHz (VHF/UHF),
- MPEG2 TS Generator : Internal Generation
- MPEG2 TS Generator : External DVB-ASI/SPI Output (Optional)
- Analogue I/Q & IF output (Optional)
- TS Checker module
- TS Decoding Information
- Easy Channel Selection by World-wide Channel Table DB
- A/V Decoding(MPEG2 SD/HD & H.264 QVGA/SD/HD)
- Automatic Modulator setting (NIT Base) * DVB System Only
- Automatic Modulator setting (PCR bitrate Base/Dynamic Mode)
- Manual Modulator Setting (Parameter Setting : ISDB-T only)
- Manual Bitrate Setting
- Jitter Injection (TR 101 290 Level Error)
- C/N Noise Generation (AWGN, Optional)
- Fading Simulator (Optional)
- Real-Time Signal Capture function
(Optional, DVB-T/ATSC/OpenCable/ISDB-T/DTMB(DMB-TH))
- TS Packet Size : RAW/188/204/188+16 (LVDS, Opt. FM200 or 201)
- Insertion of Null Packets (Static Mode, Opt. FM200 or 201)
- Perform BER Tests (Coming Soon)
- Stream & System Monitoring
- TS File Play List
- Memory Play on RAM Cache memory
- Touch Screen & Easy Operation GUI (Patent Registered)

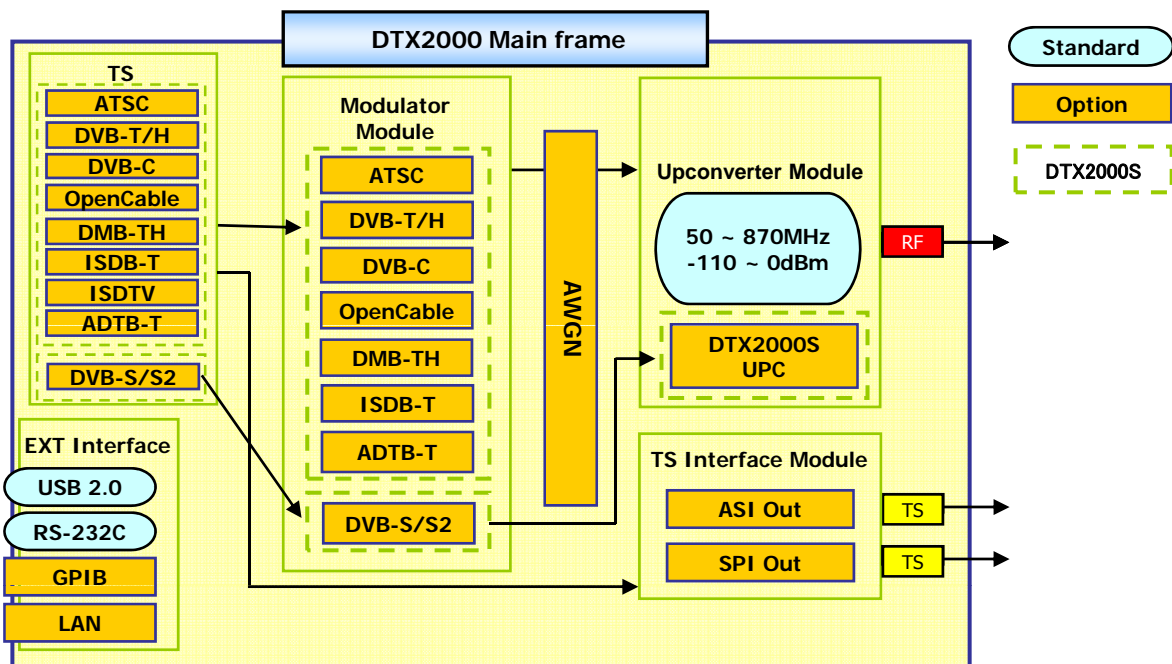
PRBS Pattern Test

- Pseudo random signal (PRBS-9)
- Pseudo random signal (PRBS-15)
- Pseudo random signal (PRBS-23)

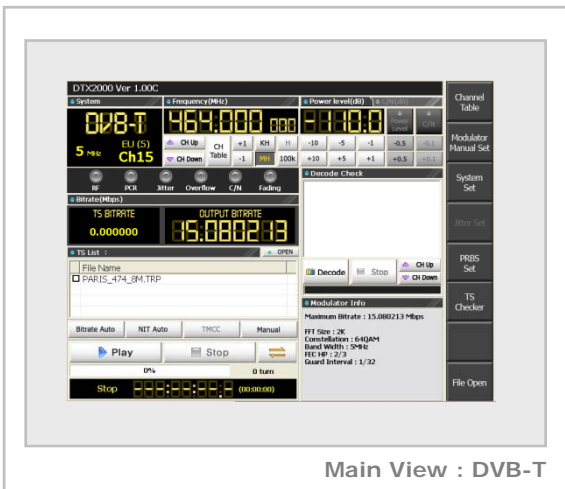
* ADTB-T Specifications (Optional)

- Conformation to standard no. GB20600-2006 of Standardization Administration of China
- Data Rate : 5.19Mbps ~ 25.98Mbps
- Input signal : MPEG2, MPEG4, AVS
- Modulation Modes : 4QAM-NR, 4QAM, 16QAM, 32QAM
- Single Carrier system (*DTMB(DMB-TH) : Multi-carrier system)
- IF output : 36MHz, 36.125MHz and 36.15MHz (Selectable)
- Bandwidth : 8MHz (Available Bandwidth 7.56MHz)

System Diagram



User Interface



Main View : DVB-T



Decoding

Specifications

RF Specifications

- Output Connector : N Type
- RF Output Frequency : 50~870 MHz (VHF/UHF)
- * DVB-S/S2 RF Output Frequency: 950 ~ 2150MHz
- RF Frequency Resolution : 1Hz
- Frequency Accuracy : $3 \times 10^{-6} / 25 \text{ }^\circ\text{C}$
- RF Power Level : -110 ~ 0dBm
- RF Level Resolution : 0.1dB steps
- RF Level Accuracy : $\pm 0.5\text{dB}$ relative to the level at 18-33 $^\circ\text{C}$
- RF Impedance : 50 Ω

Operating Specifications

- Power supply : AC 100 to 240V, 50/60Hz
- Power consumption : Less than 350W
- Operating temperature : 10 to 40 $^\circ\text{C}$
- Operating humidity : 20 to 85% RH (No Condensation)
- Guaranteed temperature : 15 to 35 $^\circ\text{C}$
- Guaranteed humidity : 20 to 85% RH (No Condensation)
- Storage temperature : -40 to +70 $^\circ\text{C} / 20 \sim 85\%$ RH
- Operating environment : Indoor
- Operating attitude : Around 2000m
- Over-voltage category : II
- Pollution degree : 2
- Dimensions : 410(W) x 205.7(H) x 329(D) mm
- Weight : Approx.13Kg (Not including options)

OS system

- Embedded OS

User interface system

- 8.4 inch TFT color LCD (800 x 600)
- Touch Screen

External Interface system

- USB Interface : USB HDD, USB Stick
- Remote Control : RS-232C, GPIB (Optional)

Modulator Options

- **DVB-T Module (M-501)**
Broadcasting system
- Digital Terrestrial TV : DVB-T
Transmission Parameter
- Modulation : COFDM
- IFFT : 2K, 8K
- Guard Interval : 1/4, 1/8, 1/16, 1/32
- Modulation Modes : QPSK, 16, 64QAM
- Coding Rate : 1/2, 2/3, 3/4, 5/6, 7/8
- **DVB-T Hierarchical Module (M-501-H)**
Broadcasting system
- Digital Terrestrial TV : DVB-T
Transmission Parameter
- Hierarchical mode : Fully supported
- Modulation : COFDM
- IFFT : 2K, 8K
- Guard Interval : 1/4, 1/8, 1/16, 1/32
- Modulation Modes : QPSK, 16, 64QAM
- Coding Rate : 1/2, 2/3, 3/4, 5/6, 7/8
- **ATSC Module (M-502)**
Broadcasting system
- Digital Terrestrial TV : ATSC
Transmission Parameter
- Modulation : 8VSB

- DVB-C Module (M-503)

Broadcasting system
 - Digital Cable TV : DVB-C
 Transmission Parameter
 - Modulation : QAM (Annex - A/C)
 - Modulation Modes : 32, 64, 128, 256QAM
 - Symbol rate : 5~7.1 MS/S

- OpenCable Module (M-504)

Broadcasting system
 - Digital Cable TV : OpenCable
 Transmission Parameter
 - Modulation : QAM (Annex - B)
 - Modulation Modes : 64, 256QAM

- DVB-S/S2 Module (M-505)

Broadcasting system
 - Digital Satellite TV : DVB-S/S2
 Transmission Parameter
 - Modulation : DVB-S/S2
 - Modulation Modes : DVB-S (BPSK, QPSK)
 DVB-S2 (QPSK, 8PSK)
 - Integrated L-Band Upconverter with on-board
 - Symbol rate : 0.088~45 MS/S

- DTMB(DMB-TH) Module (M-506)

Broadcasting system
 - Digital Terrestrial TV : DTMB(DMB-TH)
 Transmission Parameter
 - Modulation : TDS-OFDM
 - Modulation Modes : 4QAM(QPSK), 16, 64QAM
 - Guard Interval : PN420, PN595, PN945
 (Frame Header)
 - Coding Rate : 0.4, 0.6, 0.8
 - Bandwidth : 5, 6, 7, 8
 - Time Interleaver : 240, 720

- ISDB-T/SBTVD Module (M-507)

Broadcasting system
 - Digital Terrestrial TV : ISDB-T
 Transmission Parameter
 - Modulation : BTS-OFDM
 - Modulation Modes : DQPSK, QPSK, 16QAM, 64QAM
 - Guard Interval : 1/4, 1/8, 1/16, 1/32
 (Frame Header)
 - Coding Rate : 1/2, 2/3, 3/4, 5/6, 7/8
 - Time Interleaver : 0, 4, 8, 16

1 Seg., Full Seg. Supported

- DVB-T/H Module (M-508)

Broadcasting system
 - Digital Terrestrial TV : DVB-T/H
 Transmission Parameter
 - Modulation : COFDM
 - IFFT : 2K, 8K
 - Guard Interval : 1/4, 1/8, 1/16, 1/32
 - Modulation Modes : QPSK, 16, 64QAM
 - Coding Rate : 1/2, 2/3, 3/4, 5/6, 7/8

- ADTB-T Module (M-509)

Broadcasting system
 - Digital Terrestrial TV : ADTB-T
 Transmission Parameter
 - Modulation Modes : 4QAM NR, 4QAM, 16QAM, 32QAM
 - Guard Interval : PN420, PN595, PN945
 (Frame Header)
 - Bandwidth : 5, 6, 7, 8
 - Time Interleaver : 240, 720

- DVB-T/H Hierarchical Module (M-510)

Broadcasting system
 - Digital Terrestrial TV : DVB-T/H
 Transmission Parameter
 - Hierarchical mode : Fully supported
 - Modulation : COFDM
 - IFFT : 2K, 8K
 - Guard Interval : 1/4, 1/8, 1/16, 1/32
 - Modulation Modes : QPSK, 16, 64QAM
 - Coding Rate : 1/2, 2/3, 3/4, 5/6, 7/8

Function Options

- ASI Out Module(FM-200)

- Output bit rate : 0 ~ 214Mbps
 - Packet Size : 188/214Byte
 - Null Packet Insertion from H/W

- SPI(LVDS) Out Module(FM-201)

- Output bit rate : ~ 108Mbps
 - DVB/SPI Connector : D-sub 25-pin(Female)
 - Packet Size : 130, 188, 192 and 204Byte

- GPIB Module (FM-202)

- IEEE 488.2

- AWGN Module(FM-203)

- C/N range : 0 ~ +45dB
 - C/N resolution : 0.1 dB Steps
 - Noise Band Width : 0 ~ 10MHz

Ordering Information

Base Model	Description	Notes
DTX2000	DTV Signal Generator – Built-in RF Upconverter * RF Output Frequency : 50MHz ~ 870 MHz (VHF/UHF) * Frequency Resolution : 1Hz * RF Output level : -110dBm ~ 0dBm (-110 ~ +20dBm, Optional) * RF Level Resolution : 0.1dB steps	
DTX2000L	DTV Signal Generator – RF Lite Built-in RF Upconverter * RF Output Frequency : 50MHz ~ 870 MHz (VHF/UHF) * Frequency Resolution : 1KHz * RF Output level : -110dBm ~ 0dBm (-110 ~ +20dBm, Optional) * RF Level Resolution : 1dB steps	
DTX2000S	DTV Signal Generator – DVB-S/S2 Built-in RF Upconverter * RF Output Frequency : 950MHz ~ 2150 MHz * Frequency Resolution : 200KHz * RF Output level : -110dBm ~ 0dBm (-110 ~ +20dBm, Optional) * RF Level Resolution : 1dB steps	

Options	Description	Notes		
Modulator Option	M-501	DVB-T Module	* Note1 : M-501-H option can't be selected with other modulator options	
	M-501-H	DVB-T Hierarchical Module *		
	M-502	ATSC Module		
	M-503	DVB-C (Annex-A/C) Module		
	M-504	OpenCable Module		
	M-505	DVB-S/S2 Module * Frequency: 950 ~ 2150MHz		
	M-506	DTMB(DMB-TH) Module		
	M-507	ISDB-T/SBTVD Module		
	M-508	DVB-T/H Module		
	M-509	ADTB-T Module		
M-510	DVB-T/H Hierarchical Module			
Level Option	LE-600	Level Extension Module *-110 ~ + 20dBm	* Except DVB-S/S2	
Function Option	FM-200	ASI Out Module	* Max. 2 functions can be added	
	FM-201	SPI Out Module		
	FM-202	GPIB Module		
	FM-203	AWGN Module (0 ~ +45dBm) – DVB-S/S2 is not available		
	FM-204	Fading Module		* Coming Soon (2007' 4Q)
	FM-205	Analogue I/Q Out Module		
Capture Option	FM-206	BER Test Module	* Coming Soon (2007' 4Q)	
	CO-101	DVB-T Live Capture Module	* Coming Soon (Ver. 1.5)	
	CO-103	ATSC Live Capture Module		
	CO-104	OpenCable Live Capture Module		
	CO-105	ISDB-T Live Capture Module (One SEG.)		
CO-107	DTMB(DMB-TH) Live Capture Module			
ETC Option	EF-303	Option Upgrade * (All units should be returned to be Factory)	*Available after purchasing product	

* All Specifications and Features are subject to be changed without notice

