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Home Modulator HDMI to DVBT/C

HD/SD Encoder & Modulator HDMI/YPbPr/S-Video/AV to DVB-T Digital RF - Home Use



User Manual

Thank you for buying this encoder modulator.
Please read this manual carefully to install, use and maintain the encoder modulator in the best conditions of performance. Keep this manual for future reference.

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CHAPTER 1 Product Introductions

General Description

It is an all-in-one device integrating MPEG4 AVC/H.264 encoding and DVB-T modulating to convert input signals to DVB-T RF out in the frequency range of 30~960MHz.

The signals source could be from satellite receivers, closed-circuit television cameras, Blue-ray players, and antenna etc. its output signal is to be received by DVB-T standard TVs or DVB-T STBs etc.





Grounding: to connect the earth cable

DC 12V: power input

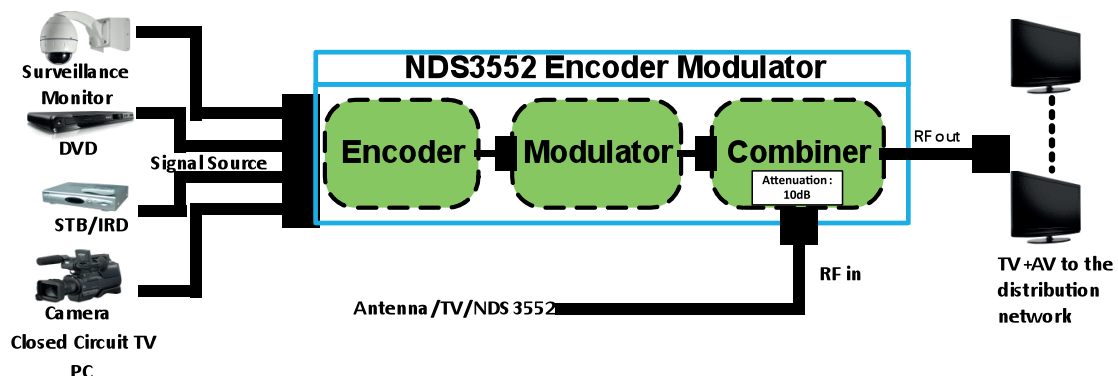
HDMI: HDMI stream input supporting HD signals

YPbPr/S-Video/AV: YPbPr/S-Video/AV signal input through a VGA adapter cable

RF in: RF Loop-through input (10 dB attenuation)

RF out: RF output to distribute modulated signal (30-960 MHz, 71~91 dBμV)

System Connection Chart



Technical Specifications

Encoding Section

HDMI	Video	Encoding	MPEG-4 AVC/H.264
		Interface	HDMI
		Resolution	1920*1080_60P,1920*1080_50P; 1920*1080_60i, 1920*1080_50i; 1280*720_60p, 1280*720_50P
		Bit rate	0.500~19.500 Mbps
	Audio	Encoding	MPEG1 Layer II, (MPEG2-AAC, MPEG4-AAC available)
		Interface	HDMI
		Sample rate	48KHz
		Bit rate	64, 96,128, 192, 256, 320, 384kbps

YPbPr/ CVBS/ S-Video	Video	Encoding	MPEG-4 AVC/H.264
		Interface	CVBS *1, YPbPr*1, S-Video*1
		Resolution	CVBS & S-Video: 720x576_50i (PAL); 720x480_60i (NTSC) YPbPr: 1920*1080_60i, 1920*1080_50i; 1280*720_60p, 1280*720_50P
		Bit rate	0.500~19.500 Mbps
	Audio	Encoding	MPEG1 Layer II, (MPEG2-AAC, MPEG4-AAC available)
		Interface	1*Stereo /mono
		Sample rate	48KHz
		Bit rate	64, 96,128, 192, 256, 320, 384kbps

Modulator Section

Standard	DVB-T COFDM
Bandwidth	6M, 7M, 8M
Constellation	QPSK, 16QAM, 64QAM,
Code rate	1/2, 2/3, 3/4, 5/6, 7/8.

Guard Interval	1/32, 1/16, 1/8, 1/4.
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Transmission Mode:	2K, 8K
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MER	≥42dB
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RF frequency	30~960 MHz, 1KHz step
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RF output level	-16~ -36 dBm (71~91 dbμV), 0.1db step
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System

Management	Local control: LCD + control buttons
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Language	English
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LCN Insertion	yes
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Upgrade	JTAG
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General

Power supply	DC 12V
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Dimensions	153*110*50mm
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Weight	< 1kg
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Operation temperature	0~45°C
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CHAPTER 2 Safety Instruction and Installations

Safety Instructions



WARNING: Hot plug is not allowed since it may cause system halted.

To prevent fire or electrical shock, do not expose the device to rain or moisture.



The encoder modulator is powered with a voltage of 12V DC. The power supply voltage must not exceed the recommended voltage, which otherwise may cause irreparable damage to the device and the invalidation of the warranty. Therefore:

- Do not replace power supply with a voltage greater than 12V DC.
- Do not connect the device to the power if the power cord is damaged.
- Do not plug the device into mains supply until all cables have been connected correctly.
- Do not cut the cord.



Avoid placing the device next to central heating components and in areas of high humidity.

Do not cover the device with elements that obstruct the ventilation slots.

If the encoder modulator has been kept in cold conditions for a long time, keep it in a warm room minimum 2 hours before plugging into the mains.

Mount the device in vertical position with the connectors located on the top side.

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutes may result in fire, electric shock or other hazards.

Safety check- Upon completion of any service or repairs to this device, ask the service technician to perform safety checks to determine that the device is in proper condition.

Installations

RISK OF damage to the unit

Mechanically handling the unit may result in damage. Do not connect the unit to the power supply before or during assembly. Connect the unit as below instructed.

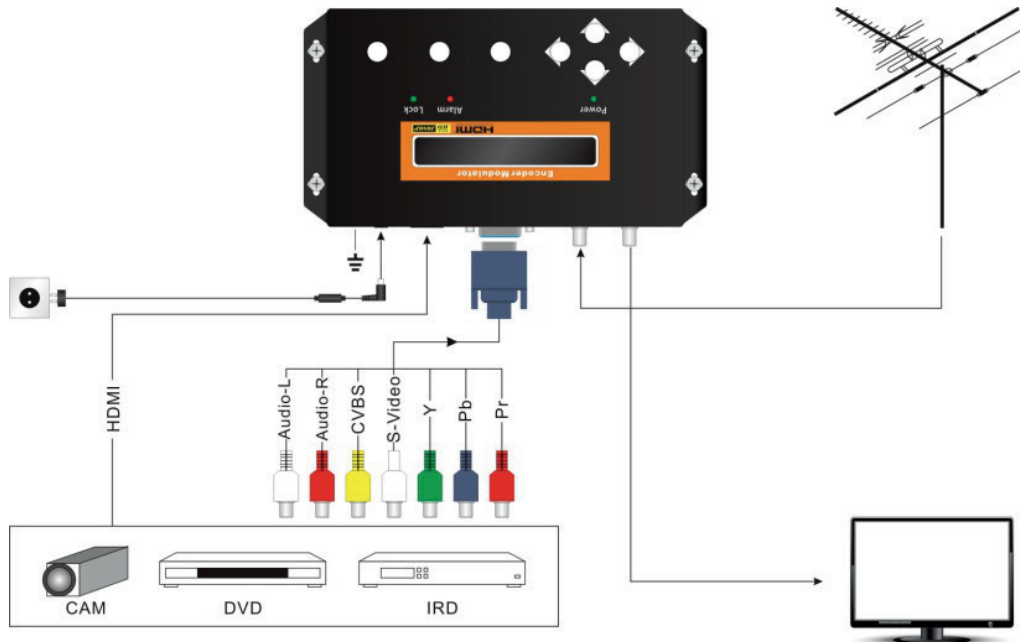
NO HOT PLUG!

1. Mount and tighten the screws and plugs to secure the unit to the wall. Left 10 cm of free space around from each unit.



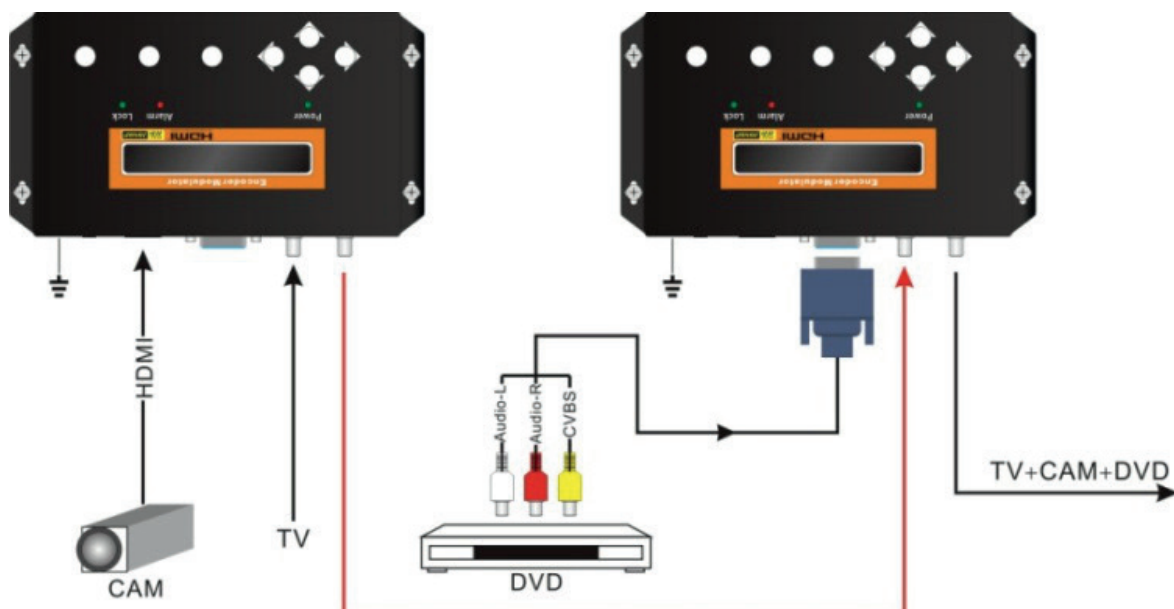
2. Connect the signal input in the respective connectors. The signal source can be from a surveillance monitor, DVD, set-top box, CCTV and etc.
3. Optionally, connect the loop-through RF input coaxial cable.
4. Connect cable to RF output to STB/TV.

5. Power supply connection: a) Connect the earth cable; b) Connect the power plug to the unit mains connector; c) Connect the power plug to the mains socket.



Cascade Installation

NDS3552 unit has 1 TV signal to RF output encoded as DVB-T Digital TV signal. Several NDS3552 units can be cascaded in order to increase the capacity. The maximum capacity of a series of N units is $1 \times N$ incorporated TV signals. To cascade 2 or more units, connect the RF output of the preceding unit to the TV input (loop-through) of the next unit (see right illustration).



CHAPTER 3 Operations and Management

NDS3552 is controlled and managed through the key board and LCD display.



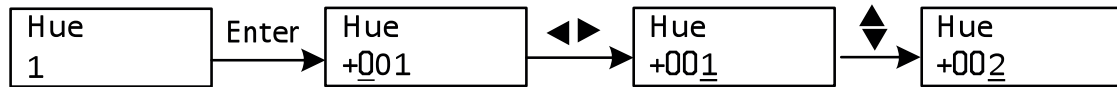
LCD Display – It presents the selected menu and the parameter settings. The backlight in the display is on when the power is applied.

LED – These lights indicate the working status

- **Power:** It lights on when the power supply is connected.
- **Alarm:** It lights on when there is error, such as the signal source loss.
- **Lock:** It lights on when the signal source connected and goes off when the signal lose.

Left/Right/Up/Down buttons – Use these buttons to turn the screen pages, shift the target items by moving the triangle, or change the parameter settings in the program mode.

Enter – Use this button to enter a submenu or save a new setting after adjustment; press it to start adjusting the value of certain items when the corresponding underline flash with Up and Down buttons;



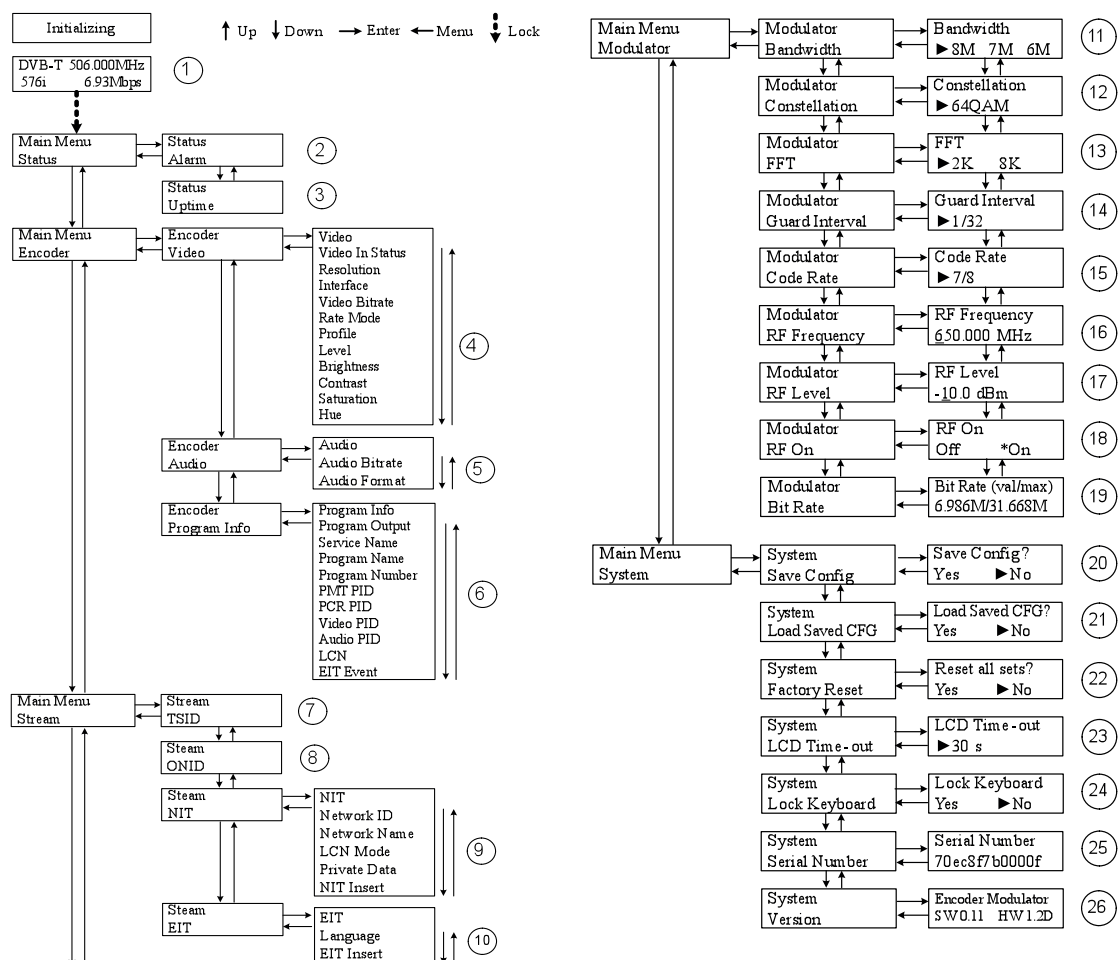
Press it to activate the hidden selections and change the setting with Up and Down (or Left and Right) buttons.



Menu – Press this button to step back

Lock – Locking the screen / cancelling the lock state, and entering the main menu after the initialization of the device. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the current configuration state.

When the power is connected, the LCD will start to initialize the program. The LCD menu goes as below chart.



- 1) DVB-T: modulating standard; XX.XXX MHz: the current output frequency; 576i: video resolution of signal source; X.XX Mbps: the current encoding bit rate
- 2) Alarm Status: For example, if the CVBS cable disconnected, it will display Video 1 Not Lock under this menu.
- 3) Uptime: It displays the working time duration of the device. It times upon power on.
- 4) Video Parameters: User can enter the items respectively to view the video status and signal source resolution, and set the input interface. User can also adjust values of rest items (Bit rate: 0.500~19.500 Mbps; Brightness & Contrast & Saturation: 0-255; Hue: -128 - +127)
- 5) Audio Bit rate: Select audio bit rate among 64, 96, 128, 192, 256, 320, 384 kbps. Audio Format: Select audio format among MPEG2, LC-AAC and HE-AAC.
- 6) Program Information: User can enable or disable the program output under menu Program Output. User can also enter the other items to edit the Service Name, Program Name, Program Number, and PIDs of PMT, PCR, Video and Audio, and edit LCN (Logical channel number). EIT Event – User can enter this menu to setup EIT (Event Information Table) for the current and next program event. The EIT contains Start Year, Start Time, Duration, and Event Name of the event. All the EIT information can be displayed on the TV screen on condition that the EIT is chosen to insert (see explanation 10.).
- 7) TSID: (Transport Stream ID) User can view or adjust after enter this menu.
- 8) ONID: (Original Network ID)-User can view or adjust after enter this menu.
- 9) NIT: (Network Information Table) NIT table is a very important table for describing the network and TS. User can enter the submenus displayed and edit the values or select the LCN (Logical channel number) mode, and choose whether to insert the NIT. If user chooses to insert the NIT, information (Network ID, Network Name, LCN Mode, Private Data and LCN number of the program mentioned in explanation 6) will be added to the transport stream.

NOTE: when the Private Data is set as 0*0, it is invalid.

- 10) EIT: EIT Insert - As mentioned above (6), the event information table can be chosen whether to insert into the TS or not under this menu. If yes, the EIT information set above (6) will be displayed on the TV screen. Language Code – to set the EIT

language For example, code of the English language is eng. If you set the code as eng, the EIT displayed will be in English language.

- 11) Bandwidth:** choose between 6M, 7M and 8M.
- 12) Constellation:** DVB-T modulator contains 3 constellation modes – 64 QAM, QPSK and 16 QAM.
- 13) FFT (Transmission Mode):** Select between 2K and 8K.
- 14) Guard Interval:** Select among 1/32, 1/16, 1/8 and 1/4.
- 15) Code Rate:** It refers to FEC-Forward Error Correction rate. It contains 1/2, 2/3, 3/4, 5/6 and 7/8.

NOTE: The different combination of bandwidth, constellation, guard interval and code rate (FEC) will form a different output code rate. Please refer to appendix table 2.

- 16) RF Frequency:** Adjust it at range of 30 to 999 MHz. Set it according your regional situation or inquire your local services.
- 17) RF Level:** Adjust it at range of -16~ -36dBm.
- 18) RF On:** User can choose to turn on or turn off the RF under this menu.
- 19) Bit Rate:** User can read the current modulating bit rate and the maximum bit rate
- 20) Save Config:** Yes/No-to save/give up the adjustment of setting.
- 21) Load Saved CFG:** Yes/No-to load/ not to load the saved configuration.
- 22) Reset all sets:** Yes/No-choose/not choose the factory's default configuration.
- 23) LCD Time out:** A time limit that LCD will light off. Choose among 5s, 10s, 45s, 60s, 90s and 120s (seconds).
- 24) Lock Keyboard:** Choose Yes to set a password and lock the keyboard, then the keyboard will be locked and cannot be applicable. It is required to input the password to unlock the key board. This operation is one-off. (If forgetting your password, please use the universal code "005599".)
- 25) Serial Number:** User can view the serial number of this device. It is read-only and unique
- 26) Version:** It displays the version information of this device. Encoder Modulator: the name of the device; SW: software version number; HW: hardware version number. User can also press ENTER again to view the published time of this device.

Appendix

Australia Air Channels			
Ch.	Frequency		
	Start	Center	End
VHF			
C00	45	48.5	52
C01	56	59.5	63
C02	63	66.5	70
C03	85	88.5	92
C04	94	97.5	101
C05	101	104.5	108
C5A	137	140.5	144
C06	174	177.5	181
C07	181	184.5	188
C08	188	191.5	195
C09	195	198.5	202
C9A	202	205.5	209
C10	209	212.5	216
C11	216	219.5	223
C12	223	226.5	230
UHF			
C20	470	473.5	477
C21	477	480.5	484
C22	484	487.5	491
C23	491	494.5	498
C24	498	501.5	505
C25	505	508.5	512
C26	512	515.5	519
C27	519	522.5	526
C28	526	529.5	533
C29	533	536.5	540
C30	540	543.5	547
C31	547	550.5	554
C32	554	557.5	561
C33	561	564.5	568
C34	568	571.5	575
C35	575	578.5	582
C36	582	585.5	589
C37	589	592.5	596

Australia Air Channels			
Ch.	Frequency		
	Start	Center	End
C38	596	599.5	603
C39	603	606.5	610
C40	610	613.5	617
C41	617	620.5	624
C42	624	627.5	631
C43	631	634.5	638
C44	638	641.5	645
C45	645	648.5	652
C46	652	655.5	659
C47	659	662.5	666
C48	666	669.5	673
C49	673	676.5	680
C50	680	683.5	687
C51	687	690.5	694
C52	694	697.5	701
C53	701	704.5	708
C54	708	711.5	715
C55	715	718.5	722
C56	722	725.5	729
C57	729	732.5	736
C58	736	739.5	743
C59	743	746.5	750
C60	750	753.5	757
C61	757	760.5	764
C62	764	767.5	771
C63	771	774.5	778
C64	778	781.5	785
C65	785	788.5	792
C66	792	795.5	799
C67	799	802.5	806
C68	806	809.5	813
C69	813	816.5	820
C70	820	823.5	827
C71	827	830.5	834
C72	834	837.5	841
C73	841	844.5	848
C74	848	851.5	855
C75	855	858.5	862

Table 1 Australia Television Frequency/Channels (MHz)

Modulation Constellation	FEC	6MHz Bandwidth				7MHz Bandwidth				8MHz Bandwidth			
		Guard Interval				Guard Interval				Guard Interval			
		1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32
QPSK	1/2	The weak ability of error-correcting and anti-interference in this area											6.03
	2/3				6.03	5.80	6.45	6.83	7.03	6.64	7.37	7.81	8.04
	3/4		6.22	6.58	6.78	6.53	7.25	7.68	7.91	7.46	8.29	8.78	9.05
	5/6	6.22	6.91	7.31	7.54	7.25	8.06	8.53	8.79	8.29	9.22	9.76	10.05
	7/8	6.53	7.25	7.68	7.91	7.62	8.46	8.96	9.23	8.71	9.68	10.25	10.56
16QAM	1/2	7.46	8.29	8.78	9.04	8.70	9.67	10.24	10.55	9.95	11.06	11.71	12.06
	2/3	9.95	11.05	11.70	12.06	11.61	12.90	13.66	14.07	13.27	14.75	15.61	16.09
	3/4	11.19	12.44	13.17	13.57	13.06	14.51	15.36	15.83	14.93	16.59	17.56	18.10
	5/6	12.44	13.82	14.63	15.08	14.51	16.12	17.07	17.59	16.59	18.43	19.52	20.11
	7/8	13.06	14.51	15.36	15.83	15.24	16.93	17.93	18.47	17.42	19.35	20.49	21.11
64QAM	1/2	11.19	12.44	13.17	13.57	13.06	14.51	15.36	15.83	14.93	16.59	17.56	18.10
	2/3	14.92	16.58	17.56	18.09	17.41	19.35	20.49	21.11	19.91	22.12	23.42	24.13
	3/4	16.79	18.66	19.76	20.35	19.59	21.77	23.05	23.75	22.39	24.88	26.35	27.14
	5/6	18.66	20.73	21.95	22.62	21.77	24.19	25.61	26.39	24.88	27.65	29.27	30.16
	7/8	19.59	21.77	23.05	23.75	22.86	25.40	26.89	27.71	26.13	29.03	30.74	31.67

Table 2 Recommended MPEG-2 Code Rate