Televes®

464 MHZ

ENCODER/MODULATOR Ref. 554901

Ref. 554901

Index

EN

ENGLISH

Safety Instructions

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

General Precautions

- ▪ 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 encoder modulator 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.

Power precautions

- ▪ 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.

1. Introduction

1.1 General Description

554901 encoder & modulator (home use) is Televes´ consumer product which allows audio/video signal input in TV distributions with applications in home entertainment, surveillance control, inns, restaurants, small shops, etc.
 It is a device that allows to convert a composite video signal (with or without audio) into digital DVB-T COFDM signal and so distribute for the existing network.
The signals source could be from satellite receivers, CCTV cameras, DVD players, etc. Its output signal is to be received by a DVB-T standard TV, DVB-T STB etc.

1.2 Blocks diagram
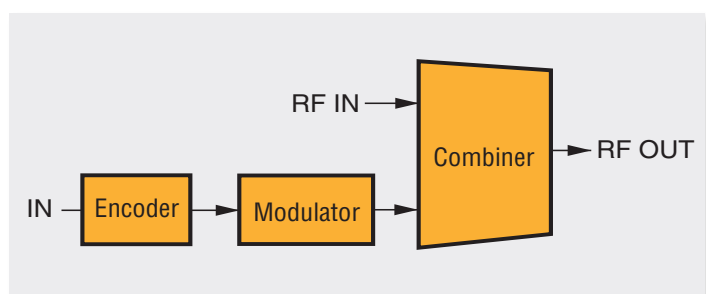
1.3 Technical specifications

Encoding Section		
Video	Encoding	MPEG-2 MP@ML(4:2:0)
	Interface	1 x CVBS
	Resolution	720x576_50i (PAL); 720x480_60i (NTSC)
	Bit rate	1.000~19.500 Mbps
Audio	Encoding	MPEG1 Layer II
	Interface	1 x 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.
Transmission Mode:		2K, 8K
MER		≥42dB
RF frequency		47~862MHz (1KHz step)
RF output level		-16~ -36 dBm (72~92 dBμV), 0.1dB step
RF looptrought		5 - 900 MHz (10 dB attenuation)
System		
Management		Local control: LCD + control buttons
Language		English
LCN Insertion		yes
Upgrade		JTAG
General		
Mains		DC 12V
Dimensions		172 x 122 x 50mm
Weight		Aprox. 500g
Operation temperature		0 ... 45 ºC

2. Product Description

2.1 Indicators and controls

LCD display

Power/alarm/lock indicators

Control Buttons

JTAG port for upgrade

DC 12V

CVBS

L/R channel

RF In

RF Out

DC 12V	Power input
CVBS	Composited video input supporting NTSC and PAL
L/R channel	Stereo Left and Right audio channels
RF in	to combine input RF signal (10 dB attenuation)
RF out	to distribute modulated signal ((47-862 MHz, 72~92 dBμV)

2.2 Installation

1. Screw the encoder modulator where you want to install it. Left 10 cm of free space around from each other once the devices have been installed.

2. Connect cables to audio/video source. The signal source can be from a surveillance monitor, DVD, set-top box, CCTV and etc.
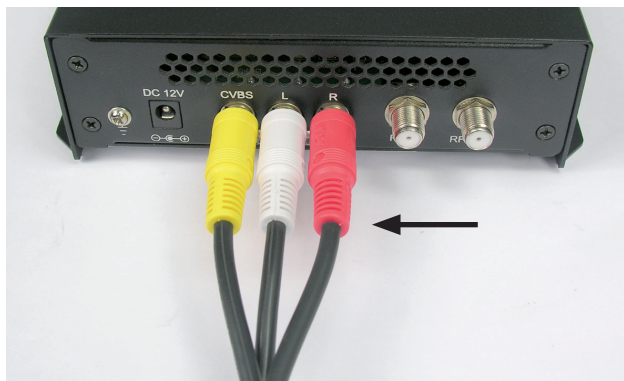
3. Connect cable to RF output to TV.

4. Connect the power to the wall outlet with the power adapter.

3. Operation

3.1 Button introduction

554901 Encoder Modulator is controlled and managed through the key board and LCD display.

LCD Display – It presents the selected menu screen 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 the 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.

◀ / ▶ / ▲ / ▼ 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;

```
HUE
 1
```
ENTER

```
HUE
+001
```
◀▶

```
HUE
+001
```
▲▼

```
HUE
+002
```

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

```
Audio bitrate
128
```
ENTER

```
Audio bitrate
*128 kbps
```
ENTER

```
Audio bitrate
▶128 kbps
```
▲▼

```
Audio bitrate
▶192 kbps
```

MENU – Press this button to step back.
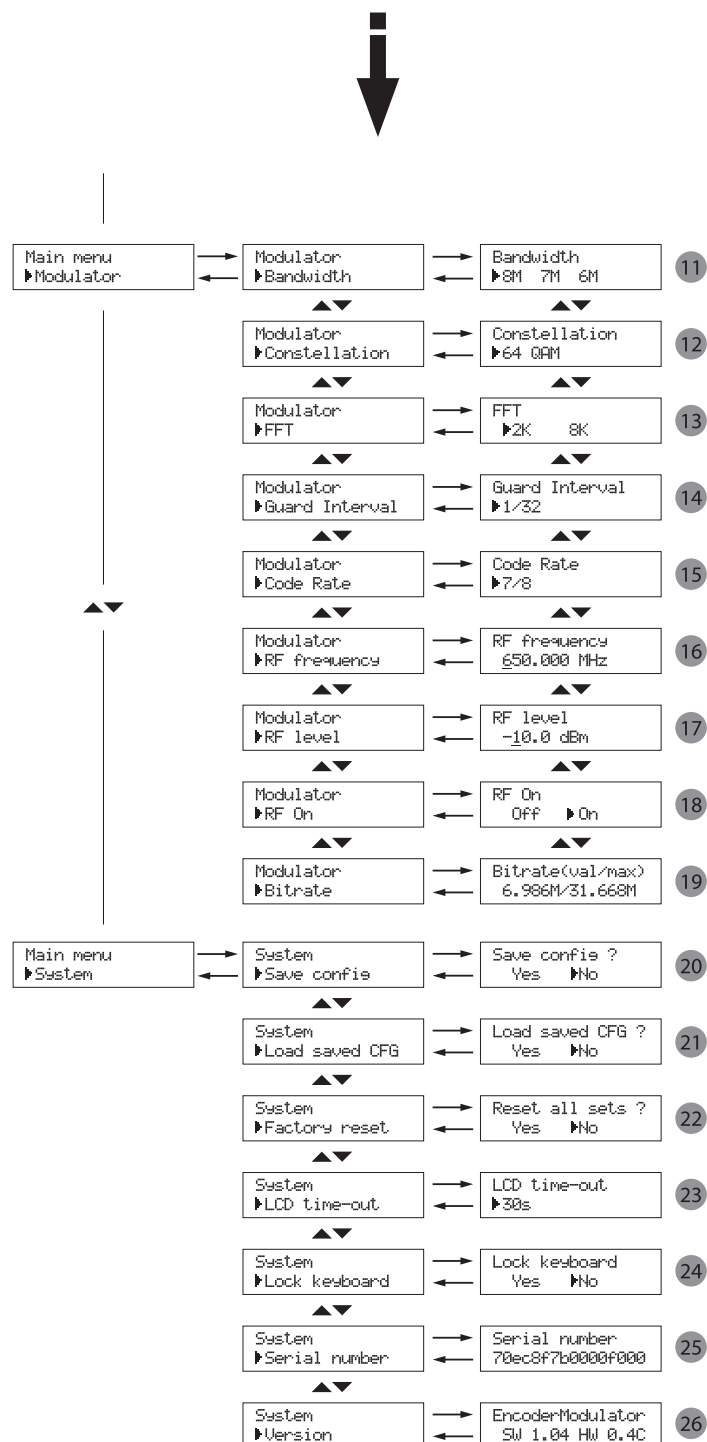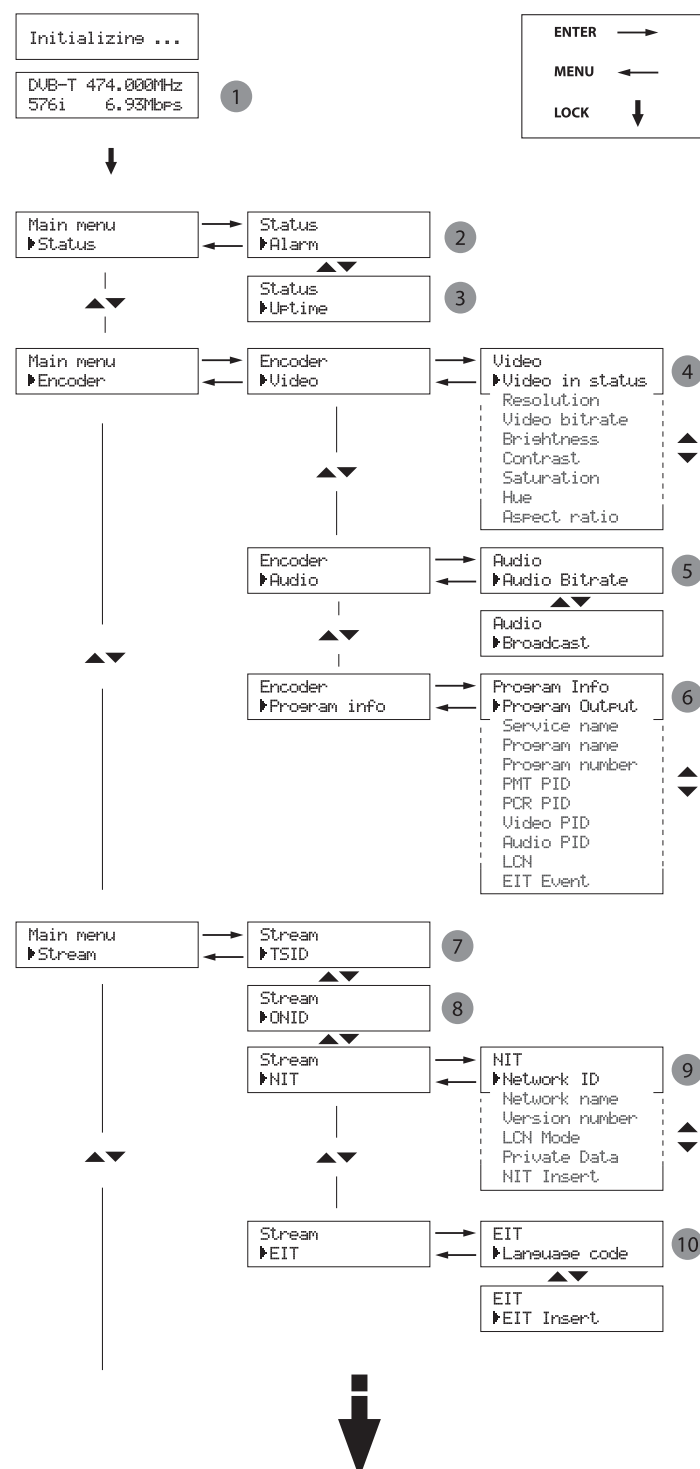**LOCK** – Locking the screen / cancelling the lock state, and entering the main menu after the initialization of the device. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the current configuration state.
When the power is connected, the LCD will start to initialize the program. The LCD menu goes as below chart.

3.2 Management

Switch On, then below status will be displayed, few seconds' initialization then open startup picture.

```
Initializing ...
```

```
DVB-T 474.000MHz
576i    6.93Mbps
```
(1)

```
ENTER  ────▶
MENU   ◀────
LOCK      ↓
```

```
Main menu            Status
▶Status              ▶Alarm
```
(2)

```
                     Status
                     ▶Uptime
```
(3)

```
Main menu            Encoder              Video
▶Encoder             ▶Video               ▶Video in status
                                           Resolution
                                           Video bitrate
                                           Brightness
                                           Contrast
                                           Saturation
                                           Hue
                                           Aspect ratio
```
(4)

```
                     Encoder              Audio
                     ▶Audio               ▶Audio Bitrate
```
(5)

```
                                          Audio
                                          ▶Broadcast
```

```
                     Encoder              Program Info
                     ▶Program info        ▶Program Output
                                           Service name
                                           Program name
                                           Program number
                                           PMT PID
                                           PCR PID
                                           Video PID
                                           Audio PID
                                           LCN
                                           EIT Event
```
(6)

```
Main menu            Stream
▶Stream              ▶TSID
```
(7)

```
                     Stream
                     ▶ONID
```
(8)

```
                     Stream               NIT
                     ▶NIT                 ▶Network ID
                                           Network name
                                           Version number
                                           LCN Mode
                                           Private Data
                                           NIT Insert
```
(9)

```
                     Stream               EIT
                     ▶EIT                 ▶Language code
```
(10)

```
                                          EIT
                                          ▶EIT Insert
```

```
Main menu            Modulator            Bandwidth
▶Modulator           ▶Bandwidth           ▶8M  7M  6M
```
(11)

```
                     Modulator            Constellation
                     ▶Constellation       ▶64 QAM
```
(12)

```
                     Modulator            FFT
                     ▶FFT                  ▶2K    8K
```
(13)

```
                     Modulator            Guard Interval
                     ▶Guard Interval      ▶1/32
```
(14)

```
                     Modulator            Code Rate
                     ▶Code Rate           ▶7/8
```
(15)

```
                     Modulator            RF frequency
                     ▶RF frequency         650.000 MHz
```
(16)

```
                     Modulator            RF level
                     ▶RF level             -10.0 dBm
```
(17)

```
                     Modulator            RF On
                     ▶RF On                Off   ▶On
```
(18)

```
                     Modulator            Bitrate(val/max)
                     ▶Bitrate              6.986M/31.668M
```
(19)

```
Main menu            System               Save config ?
▶System              ▶Save config          Yes   ▶No
```
(20)

```
                     System               Load saved CFG ?
                     ▶Load saved CFG       Yes    ▶No
```
(21)

```
                     System               Reset all sets ?
                     ▶Factory reset        Yes    ▶No
```
(22)

```
                     System               LCD time-out
                     ▶LCD time-out        ▶30s
```
(23)

```
                     System               Lock keyboard
                     ▶Lock keyboard        Yes   ▶No
```
(24)

```
                     System               Serial number
                     ▶Serial number       70ec8f7b0000f000
```
(25)

```
                     System               EncoderModulator
                     ▶Version              SW 1.04 HW 0.4C
```
(26)

3.3 General setting for main menu

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. User can also adjust values of rest items. (Bit rate: 1.000~19.000 Mbps; Brightness & Contrast & Saturation: 0-255; Hue: -128 - +127; Aspect Ratio: 4:3 or 16:9)

5 **Audio Bit rate**: Select audio bit rate among 64, 96, 128, 192, 256, 320, 384 kbps.

Broadcast: Enable – the output program will broadcast only audio without the picture; Disable – cancel broadcast mode to resume both audio and video.

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 Time, Duration, Event Name, and Start Year 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, LCD 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 1.

16 **RF Frequency**: Adjust it at range of 47 to 862MHz. 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 **Factory Reset**: 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 lock the keyboard, when the keyboard will not applicable to avoid unexpected operations. Choose No to unlock the keyboard.

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.
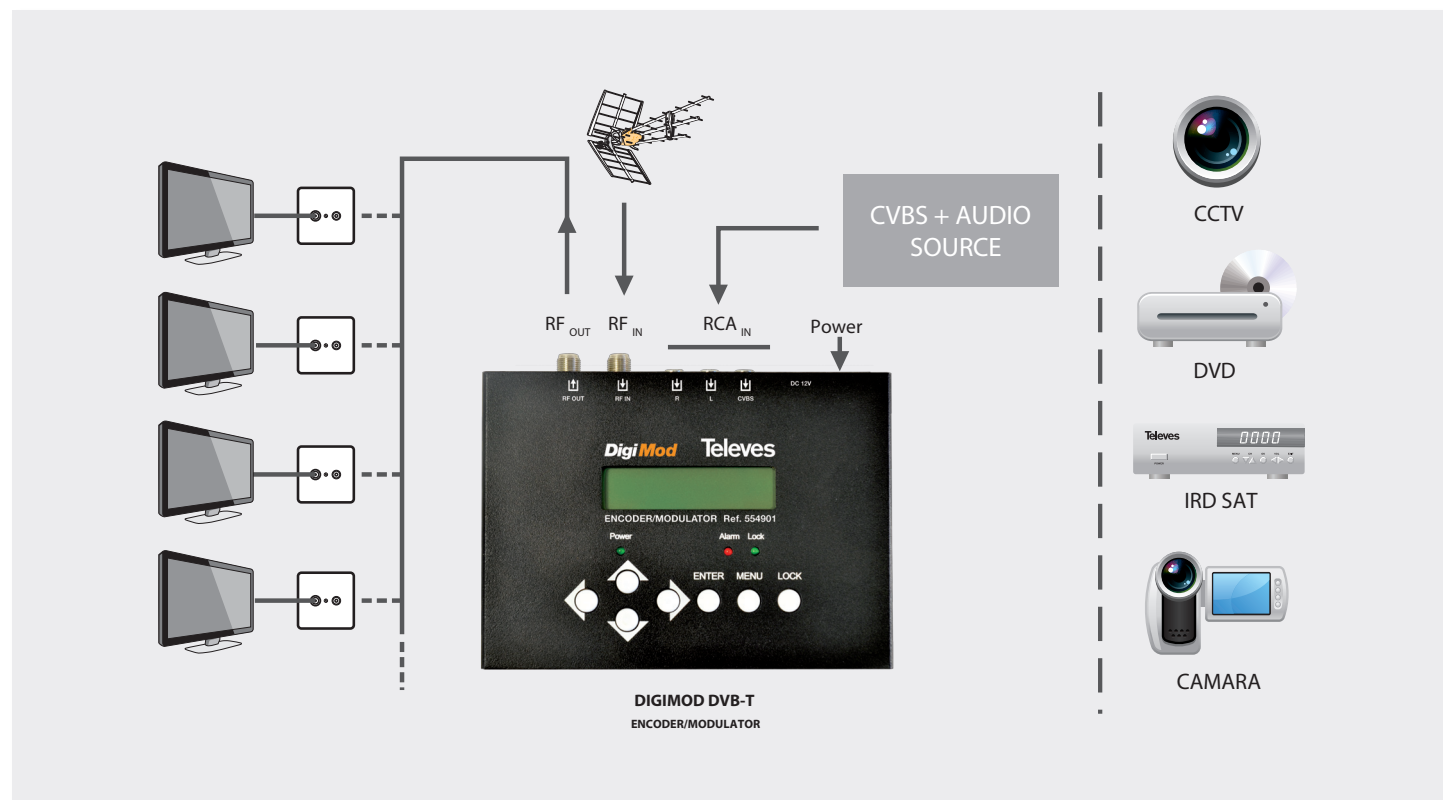
4. Application example

Table 1 Recommended MPEG-2 Code Rate

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

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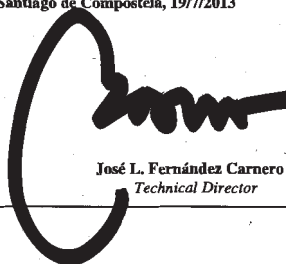· **Low Voltage Directive 2006 / 95 / EC**

· **EMC Directive 2004 / 108 / EC**

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