PRO-3GPG
3G/HD/SD-SDI Pattern Generator
User Manual

Made in Taiwan rev.120711

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Safety Precautions

PESA's **PRO-3GPG 3G/HD/SD-SDI Pattern Generator** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment, the **PRO-3GPG** should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep away the objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter, power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

Warranty Information

PESA Switching Systems, Inc., (PESA) warrants this equipment against defective workmanship or materials for a period of one (1) year from date of shipment. The sole warranty responsibility of PESA, shall be to replace or repair product proved to be defective. During the warranty period, defective parts will be replaced at no charge. Labor to repair or replace defective parts covered under the warranty will be performed at no charge at PESA. This warranty covers only products manufactured by PESA, and the components used in their manufacture. The warranty on assembled products sold by PESA, but manufactured by others shall be that of the original manufacturer. This warranty does not include shipping damage or damage caused by abuse, neglect, tampering by unauthorized personnel, damage inadvertently caused by the user, preventative maintenance, or any equipment or part thereof whose serial number has been removed or defaced. Neither the seller nor the manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the inability to use the product. Before using, user shall determine the suitability of the product for the intended use, and user assumes all risk and liability whatsoever in connection therewith. This warranty is effective only at the PESA factory in Huntsville, Alabama, USA. If possible, retain the original packing material for use in the unlikely event that your equipment must be returned to the PESA factory. When shipping your equipment, the shipping charges must be prepaid. The repaired unit will be returned to you, freight prepaid. This warranty is exclusive and in lieu of all other warranties, whether expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose.

INTRODUCTION

PESA's **PRO-3GPG 3G/HD/SD-SDI Pattern Generator** is an advanced SDI pattern generator with multi-format (3G/HD/SD) and multi-pattern support. Besides still images and moving video test patterns, other features such as audio (SMPTE-291M) are also provided. The PRO-3GPG can support up to 8 channel AES compliant audio with 48 kHz sample rate. Another attractive feature of PRO-3GPG is the ability to input HDMI sources allowing users the option of other testing patterns. In addition, the device can be used as an HDMI to HD-SDI signal converter. The PRO-3GPG is a portable device equipped with four buttons and an LCD screen for easy setup. This device provides a cost effective way to calibrate and test SDI enabled video devices and displays.

Features

- **Supported Output Resolution**
  NTSC 525@60, PAL 625@50, 720p@23.98, 720p@24, 720p@25, 720@29.94, 720p@30, 720p@50,720p@59.94, 720p@60, 1080i@50, 1080i@59.94, 1080i@60, 1080p@23.97, 1080p@24, 1080p@25, 1080p@29.97, 1080p@30, 1080p@50, 1080p@59.94, 1080p@60
  Bit Rate: 2.97 Gbps, 2.967 Gbps, 1.485 Gbps, 1.4835 Gbps, 270 Mbps
  Resolution: 10bit

- **Video Patterns**
  100% Color Bars, Borderline, Random Noise, Check Field, Black, Vertical Lines, Black / White alternate fields, Full Grey / Full White, Black to White Gradient, Random Generator for all still patterns, moving squares White noise, Inverse effect with still pattern, Scrolling Title (see Appendix for illustrations)

- **Save Settings to Memory Option**

- **ANC Data**
  EDH (RP-165), SMPTE 352M, SMPTE291M

- **Control**
  By LCM or panel buttons

- **Video Output**
  Triple SDI output (SDI, HD-SDI, 3G-SDI)

Specifications & Package Contents

Function	Pattern Generator for NTSC, PAL, SDI, HD-SDI, 3G-SDI
Auto SDI Rate Detection	Yes
Supported Protocols	SMPTE 259 (270Mbps / 360Mbps) SMPTE 292 (1.485Gbps and 1.485/1.001 Gbps) SMPTE 424 (2.97Gpbs and 2.97/1.001 Gbps)
Data Rates	143 / 270 / 1483 / 1485 / 2967 / 2970 Mbps
Video Support	[SD] NTSC@59.94 / PAL@50Hz [HD] 720p50, 59.94, 60, 1080p24/30, 1035i50/59.94/60, 1080i50/59.94/60 [3G] 1080p50/59.94/60
HDMI Bypass	Yes
Output Impedance	75 OHM
Cable EQ	[3G] = 60m, [HD-SDI]=150m, [SD-SDI]= 300m based on Belden 1694A
Audio Support	Yes
HD Eye Pattern Characteristics	Amplitude: 800mV <10% Rise overshoot: less than 2% Long time jitter <1.0UI Timing Jitter <1.0UI Alignment jitter <0.2UI
Output	BNC, two ports
Dimensions	6.3” X 4.3” X .08” (160mm X 110mm X 20mm)
Power Supply	5V 4A DC
Power Consumption	10W (max.)
Operating Temperature	0-40C (32-104F)
Package Contents	Pattern Generator, AC Power adapter, manual

The measurement results are from Tektronix WFM-7120 with SDI through 1m (3.3ft) long Belden 1694A.

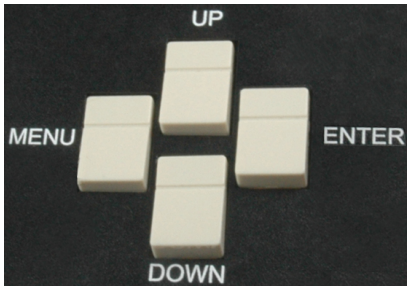
Menu Operation

Menu	Items	
01 Format	**Resolution**	**NTSC**
		PAL
		720p
		1080p
		1080i
	Frequency	**60**
		59.94
		50
		30
		29.97
		25
		24
		23.98
	Output	**YCbCr 422**
02 Video	**Patterns**	**SMPTE Bar**
		100% Bar
		Check Field 1
		Check Field 2
		Check Field 3
		Gradient R1
		Gradient G1
		Gradient B1
		Gradient R2
		Gradient G2
		Gradient B2
		Gradient R3
		Gradient G3
		Gradient B3
		Gradient R4
		Gradient G4
		Gradient B4
		Red Level 1
		Red Level 2
		Green Level 1
		Green Level 2
		Blue Level 1
		Blue Level 2
		100% Red
		100% Green
		100% Blue
		100% White
		70% Gray
		40% Gray
		Black
		Noise
		Circle 1
		Circle 2

		Moire
		H Stripe R
		H Stripe G
		H Stripe B
		V Stripe R
		V Stripe G
		V Stripe B
		Chess 1
		Chess 2
		Sequence
	Text	Off
		On-White
		On-Black
	Timer	Off
		On-W/B
		On-B/W
03 Audio	Mode	Off
		On
	Group	1+2
		3+4
	Level	-6dB
		-12dB
		-18dB
		-24dB
		-30dB
		-36dB
		-42dB
		Silence
		Random
	Mask	Off
		CH 1234
		CH 1
		CH 2
		CH 3
		CH 4
		CH 1+2
		CH 3+4
04 Motion	Motion	No Motion
		Square 1
		Square 2
		2 Squares
		Square Inv
	Data Speed	1
		2
		3
		4

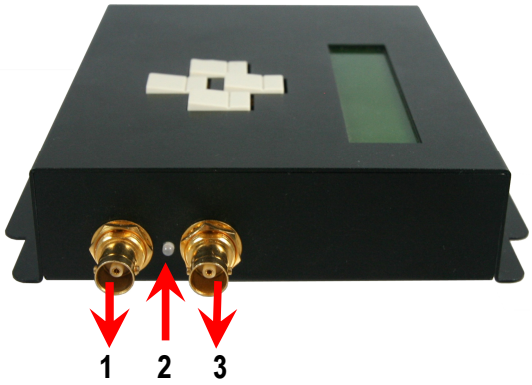
		5
		6
		7
		8
05 ANC Data	**SMPTE-352M**	**Off**
		On
	EDH	**On**
		Off
06 System	**Status**	**No Change**
		Factory
		Now Save
	Version	**V1.00**

Top View



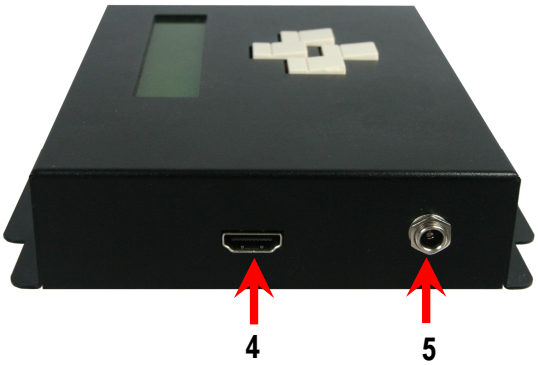
Button	Function
Menu	Trigger menu operation
Enter	Enter menu item
Up	Choose previous menu item
Down	Choose next menu item

Side View

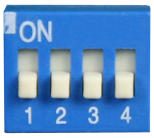


1. **SDI OUTPUT A:** Connect to a SDI device for SDI, HD-SDI, or 3G-SDI signal output either from the chosen pattern or the converted HDMI source signal

2. **Lock LED:** Indicates presence of audio/video signal
3. **SDI OUTPUT B:** Connect to a SDI device for SDI, HD-SDI, 3G-SDI signal output either from the chosen pattern or the converted HDMI source signal



4. **(Optional) HDMI INPUT:** Plug in a HDMI cable to be linked to a HDMI source
5. **+5V DC:** Connect to a 5 VDC power supply unit



A 4-pin DIP switch, accessible from bottom of unit, provides user interface.

Pin No.	1	2	3	4
ON (🡅)	Used for SMPTE352M	3G level B	Not in use	Update EDID
OFF (🡇)		3G level A	Not in use	Default EDID

Note

1. Factory default for 4-pin DIP switch: OFF-OFF-OFF-OFF [🡇-🡇-🡇-🡇]
2. In order to keep the compatibility of HDMI to most monitors, the PRO-3GPG features EDID learning ability. The operation is shown in the EDID Learning section.

EDID Learning

1. Turn off PRO-3GPG and set the pin 4 of DIP switch of PRO-3GPG to OFF [🡻].
2. Connect the HDTV to the HDMI port on the PRO-3GPG, and then plug in the power.
3. The Lock LED on the PRO-3GPG will dim and light again, which indicates the EDID learning process is done.
4. Connect PRO-3GPG to the HDMI source through a HDMI cable.

Notes

1. In HDMI bypass mode, users must be aware that jitter from HDMI sources, such as DVD players, may exceed typical SMPTE requirement on HD-SDI signals. This could result in SDI output with high jitter, or no SDI output!
2. Due to the high frequency bandwidth and low jitter requirement of 3G-SDI signals, it is strongly recommended to use just one SDI OUTPUT with one 75 ohm.
3. Features including new timings and patterns may be added to the device without notice following a firmware update! This may affect the menu items, but will keep the same framework for users!

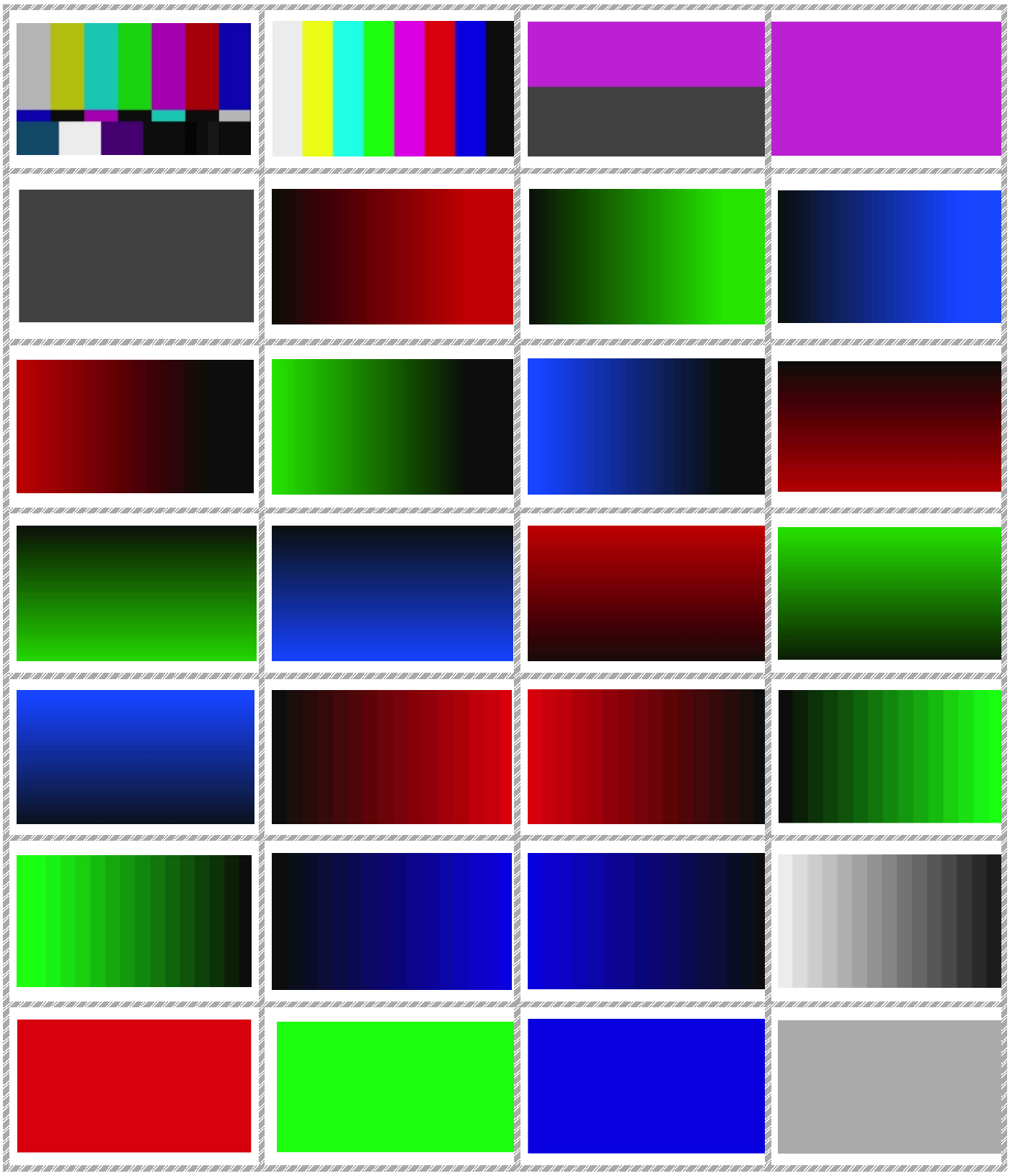
Appendix

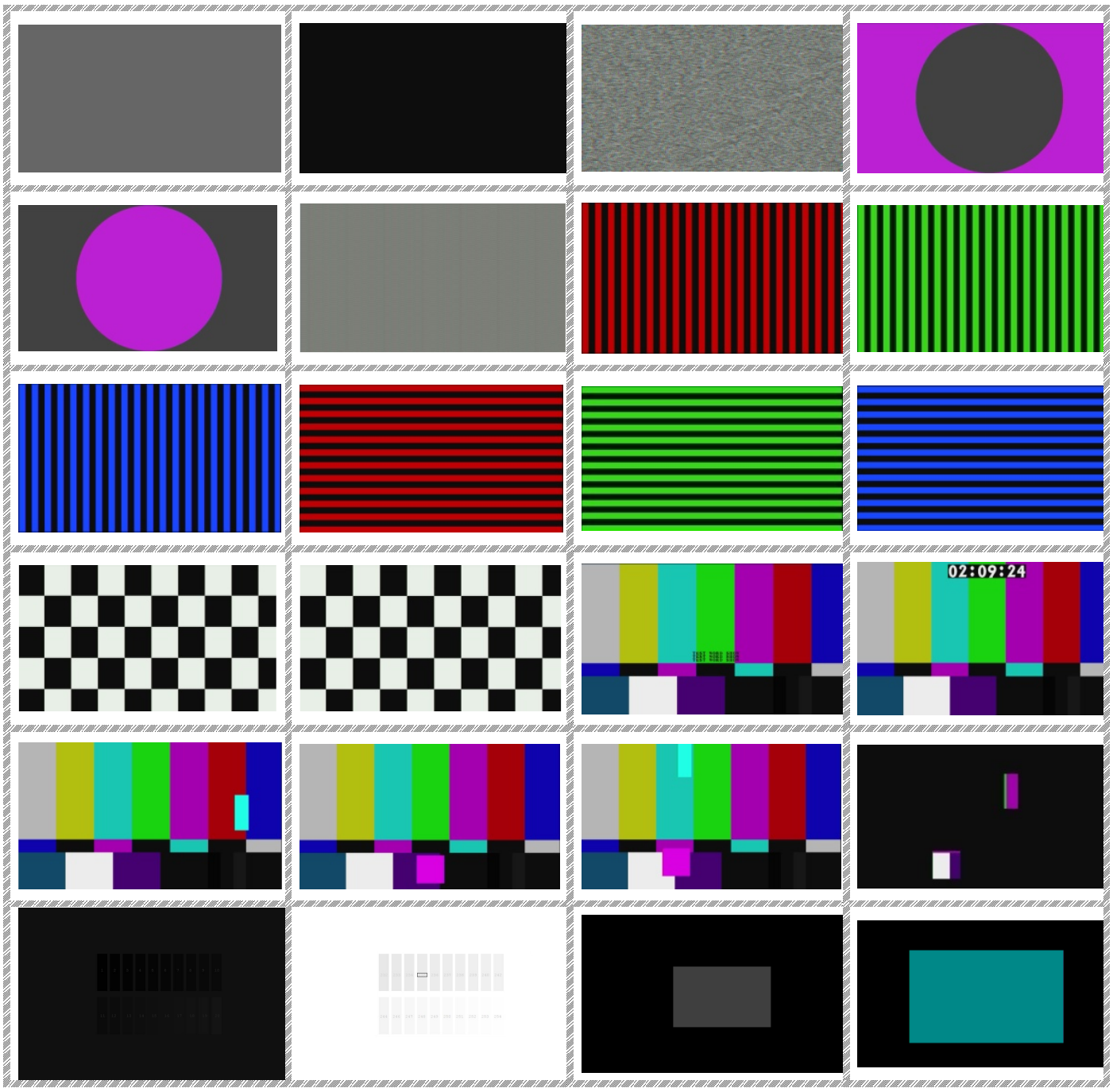
- Data Identification Word of Ancillary Data Packet

ANC Data	DID	SDID/DBN
352M	0x41	0x01
RP-165-EDH*	0xF4	0x00

* Data Type 1(SMPTE-291M)

- Built-in Video Patterns




02:09:24

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