

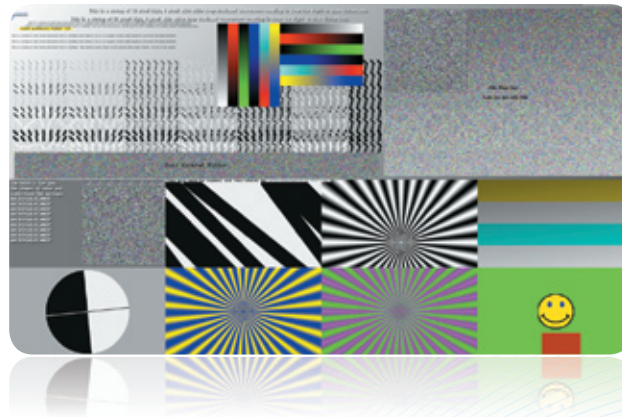
*Visually Check  
Performance  
of Encoders*



Sarnoff's ESP™ Encoder Stress Pattern is a sophisticated digital video clip that quickly reveals performance differences among television encoders or other video processing components. Consisting of an endless 32-frame motion sequence composite, the ESP's specialized and complex artificial test patterns stress various aspects of processing. By forcing different failure modes, the ESP allows users to visually evaluate how well an encoder responds to a range of spatial and temporal situations. Its rapid and realistic display of results enables viewers to quickly and easily make meaningful comparisons between products.

## Capabilities

- » Evaluate standard and high definition encoder quality
- » Visually verify results using on-screen pattern
- » Monitor output for signs of deterioration
- » Determine encoder performance limits
  - Spatial resolution
  - Judder and dropped frames
  - Smoothness/sharpness of edges
  - Horizontal, vertical or circular motion
- » Pinpoint areas of compromise in design
- » Tune encoder settings for best performance



ESP: Source Image. The full effect is impossible to reproduce in print, especially the extensive motion components throughout the pattern. Components within the ESP offer sequences of pathological video that stress different aspects of encoder performance.

## Full Scope of Tests

» The patterns in the ESP address many crucial aspects of performance.

These include, but are not limited to:

- Alias Edging
- Amplitude Range
- HF Quantization
- DC Quantization
- Noise Corruption
- Motion Estimation
- Raster Decimation
- Temporal Subsampling
- Temporal Quantization
- Bit Rate Effects
- Judder & Missing Frames
- System Frequency Response
- Spatial Frequency Response
- V vs. H Resolution Equality

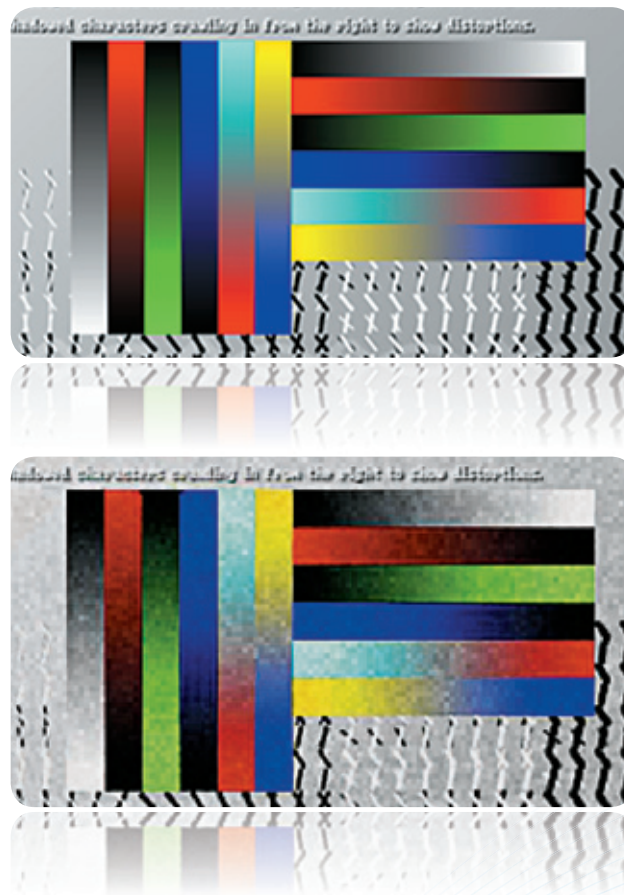
## Formats and Media

» The ESP includes the following formats:

- 1920 x 1080i 30/29.97
- 1280 x 720p 60/59.94
- 720 x 480p 30/29.97
- 720 x 480i 30/29.97
- 416 x 240p 30  
(ATSC Mobile DTV)

» Media:

- DVD containing R'G'B' 4:4:4 uncompressed frames



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ESP: After Encoding.

Typical degradation after processing appears as dropped or altered image details, motion artifacts, etc.