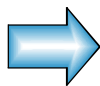

Testing Digital Video on Cable TV Systems

Measuring emerging technologies...



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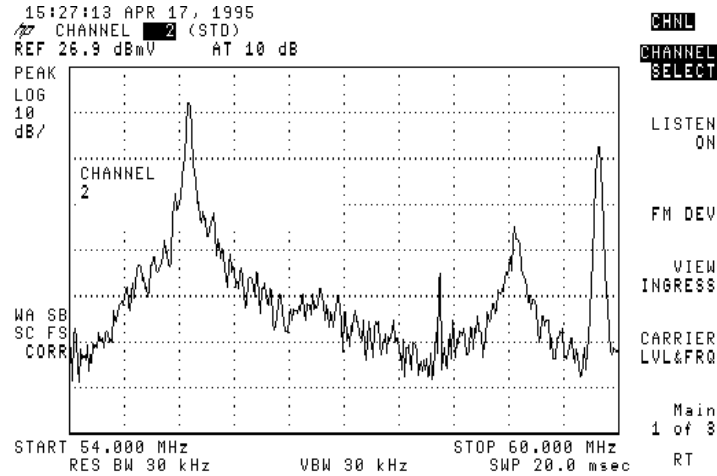


- Adding *digital* challenges to the *analog* system
- Testing digital video
 - Power and spectrum
 - Modulation accuracy
 - Data quality



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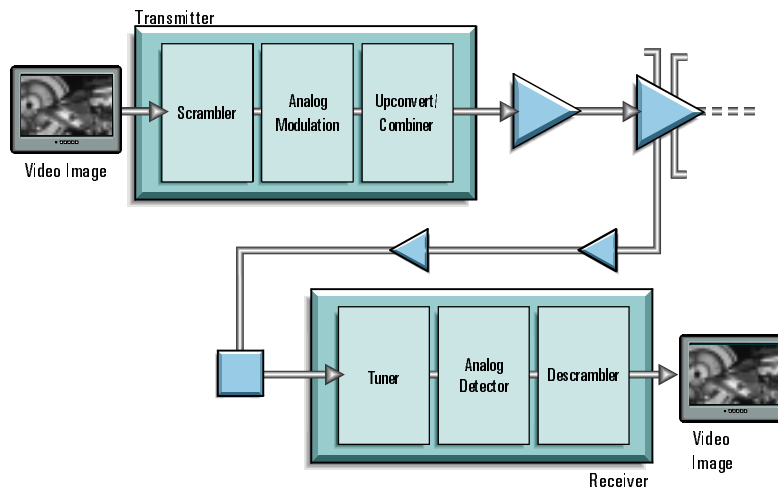
Analog Video Spectrum



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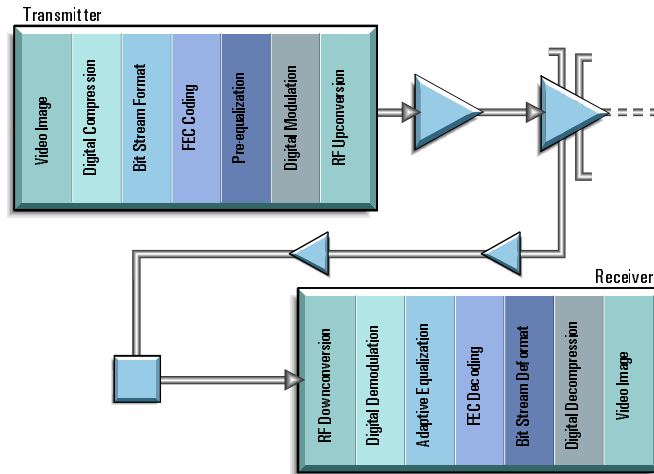
Analog Cable Transmission



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Digital Cable Transmission



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Digital Video Measurement Challenges

- Broadband signal, utilizing full 6 MHz channel bandwidth
- Multiple digital modulation formats in the same cable system
- Multiple layers of signal processing in transmitter and receiver conceal the true quality of the video at different test points in the cable system
- Video picture must be recovered from many small data fragments scattered in time

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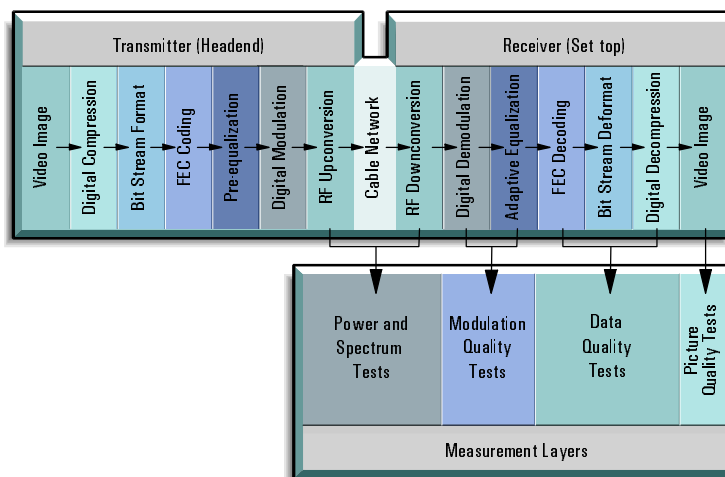
Contents

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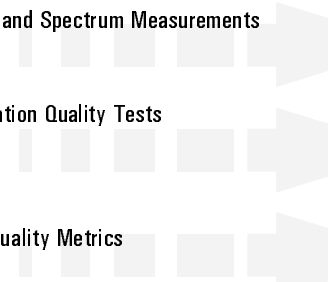
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Probe the Layers of Digital Video



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Different Views of the Digital System

- Power and Spectrum Measurements
 - Modulation Quality Tests
 - Data Quality Metrics
- 
- Keys to cable system power level, adjustment and channel quality.
 - Sensitive tools for detecting signal impairment
 - Overall, end-to-end checks on the integrity of transmitted data



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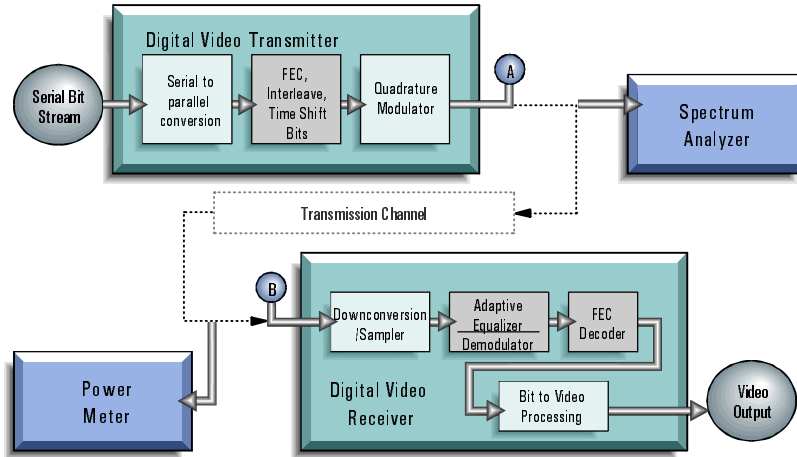
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Power and Spectrum Test Points

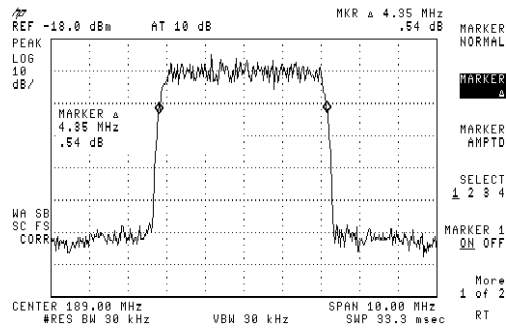


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Measuring Average Power of Digital Video

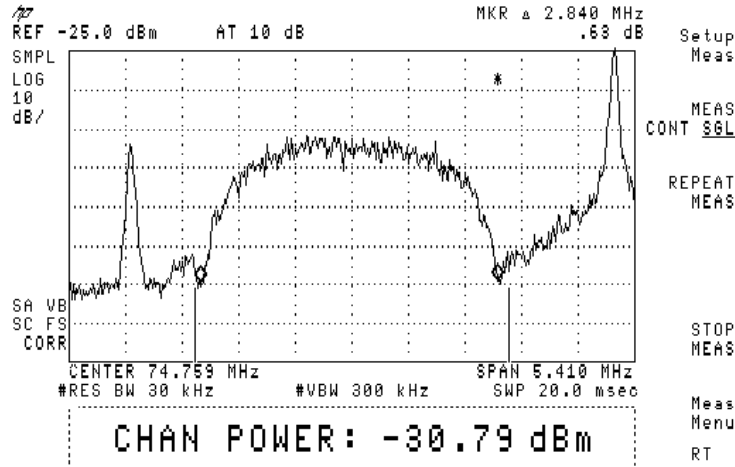
- 6 MHz bandwidth, noise-like signal
- Center frequency 30MHz-1 GHz
- High accuracy required



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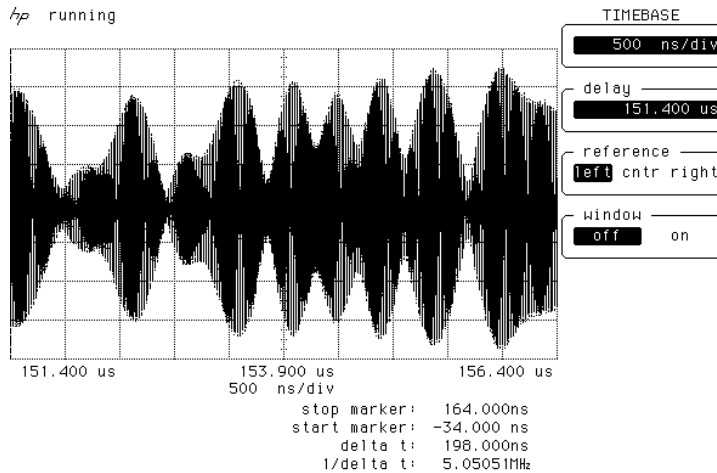
Average Power Test



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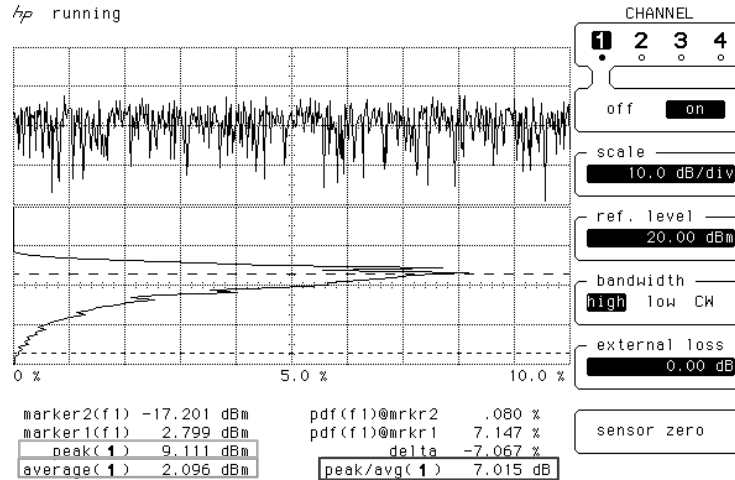
Digital Video: Random Amplitude Variations

hp running



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Peak Power Test



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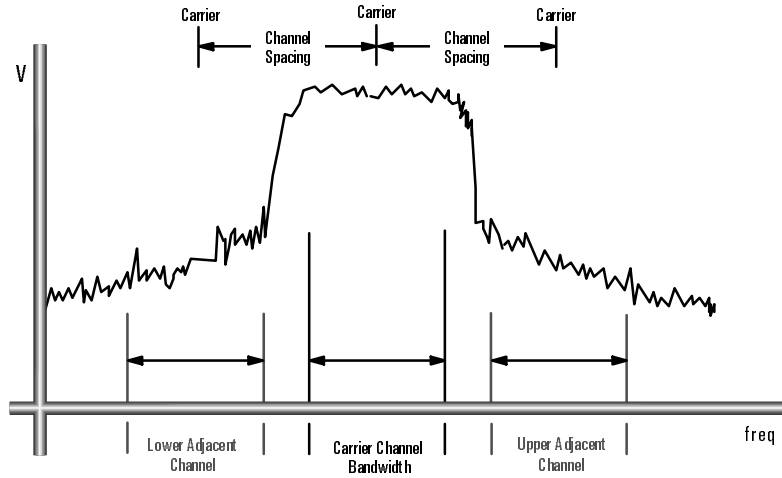
Spectrum Tests: Searching for Spurious Interference

- Ingress
- Noise
- Analog intermodulation products interfering with digital video signals
 - CSO, CTB are important in a mixed analog/digital system
- Digital video spillover into adjacent analog channels



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Digital Video Spillover: Adjacent Channel Power



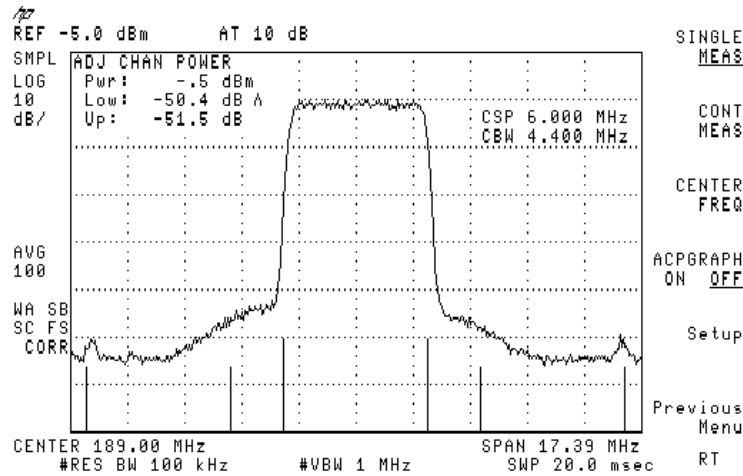
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Adjacent Channel Power Test



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