Comparison of Analog & Digital

B. W. St. Clair

November 2003

SHOE
Jeff MacNelly
WOW! THEY HAVE DEVELOPED THIS HIGH RESOLUTION TV.
THAT WOULD MEAN WE'D GET A MUCH BETTER PICTURE, WOULDN'T IT?
I GUESS—
IF WE CAN GET HIGH RESOLUTION ALUMINUM FOIL...
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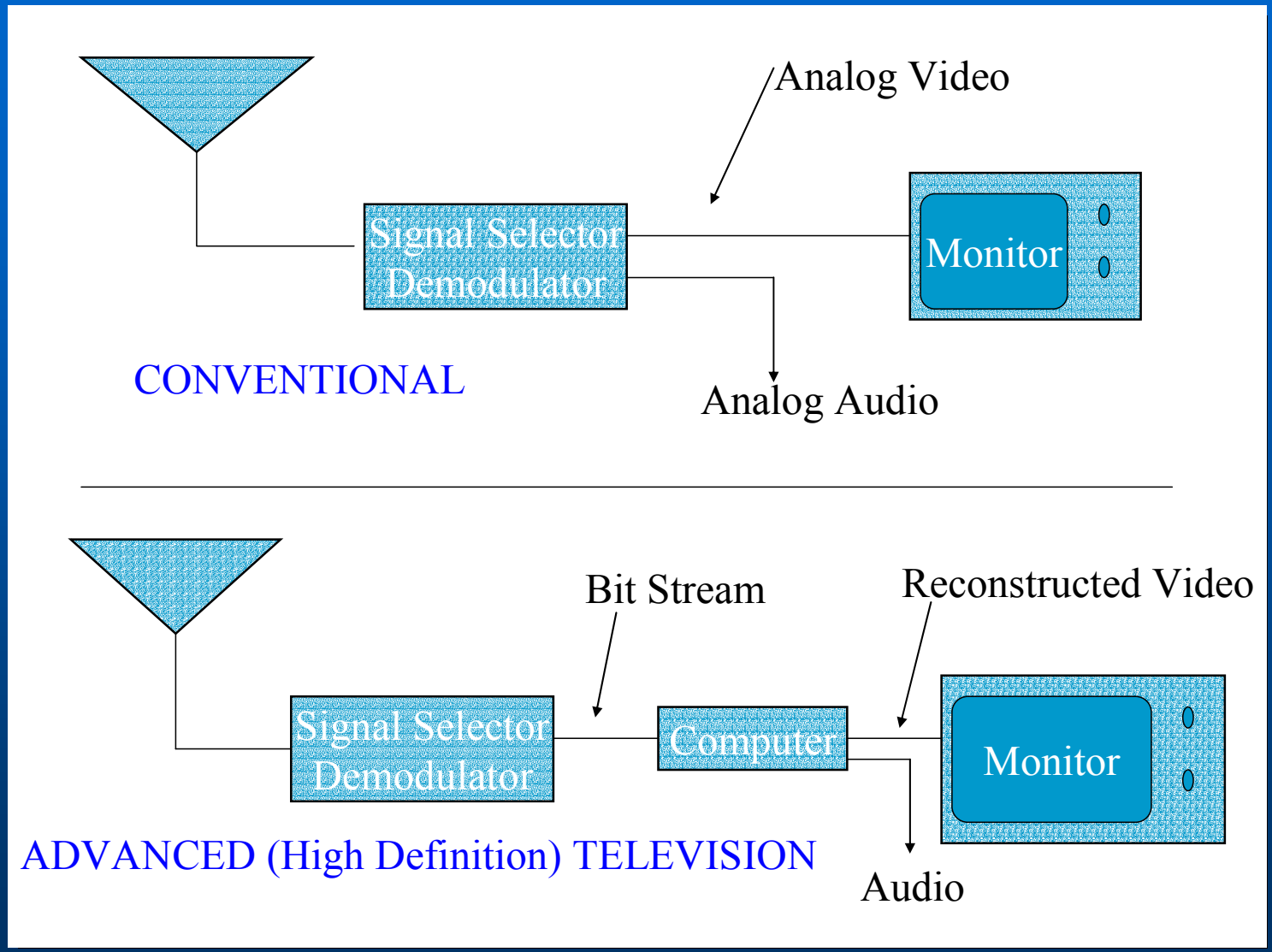
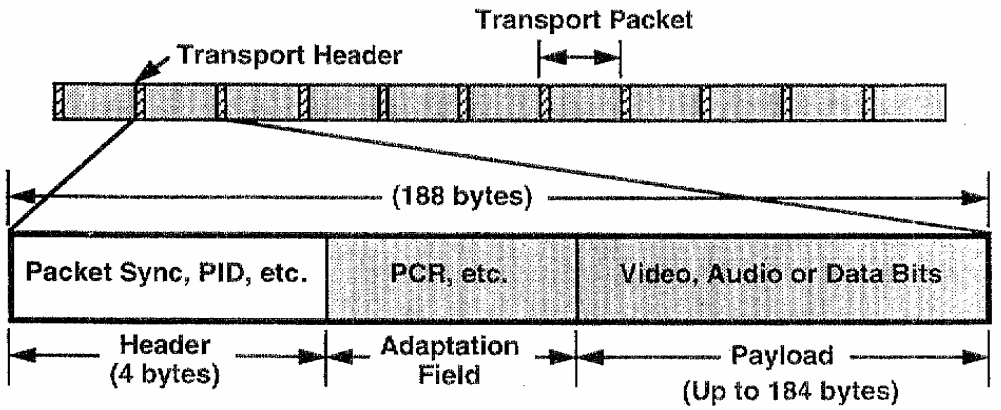

Analog Video
Signal Selector
Demodulator
Monitor
CONVENTIONAL
Analog Audio
Bit Stream
Reconstructed Video
Signal Selector
Demodulator
Computer
Monitor
ADVANCED (High Definition) TELEVISION
Audio

MPEG-2 Transport Packet



- **PID = Packet ID**
- **PCR = Program Clock Reference (Master Clock)**

SARNOFF

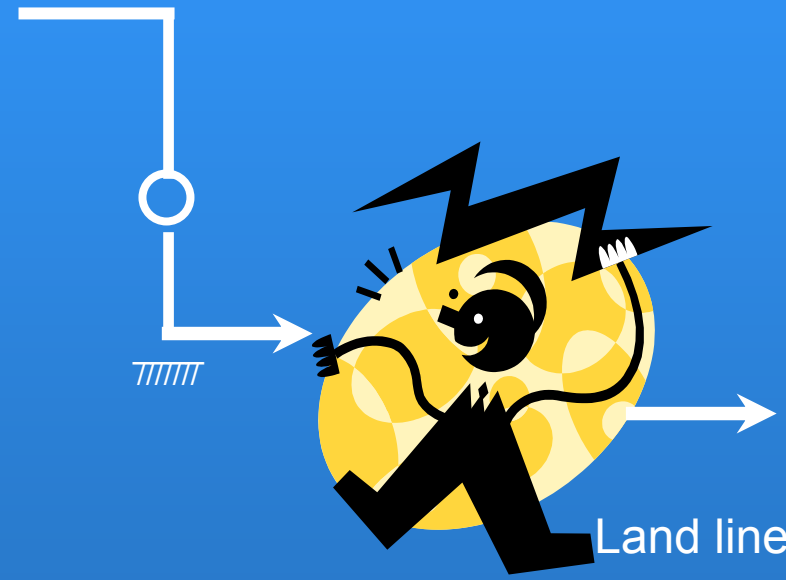
Total Errors From All Sources Are What Count.

1900 ERA

Ship to shore

digital transmission

(Morse Code)



Land line

error corrected

message

Sky wave propagation erratic

Noise pulses – lightning & machinery

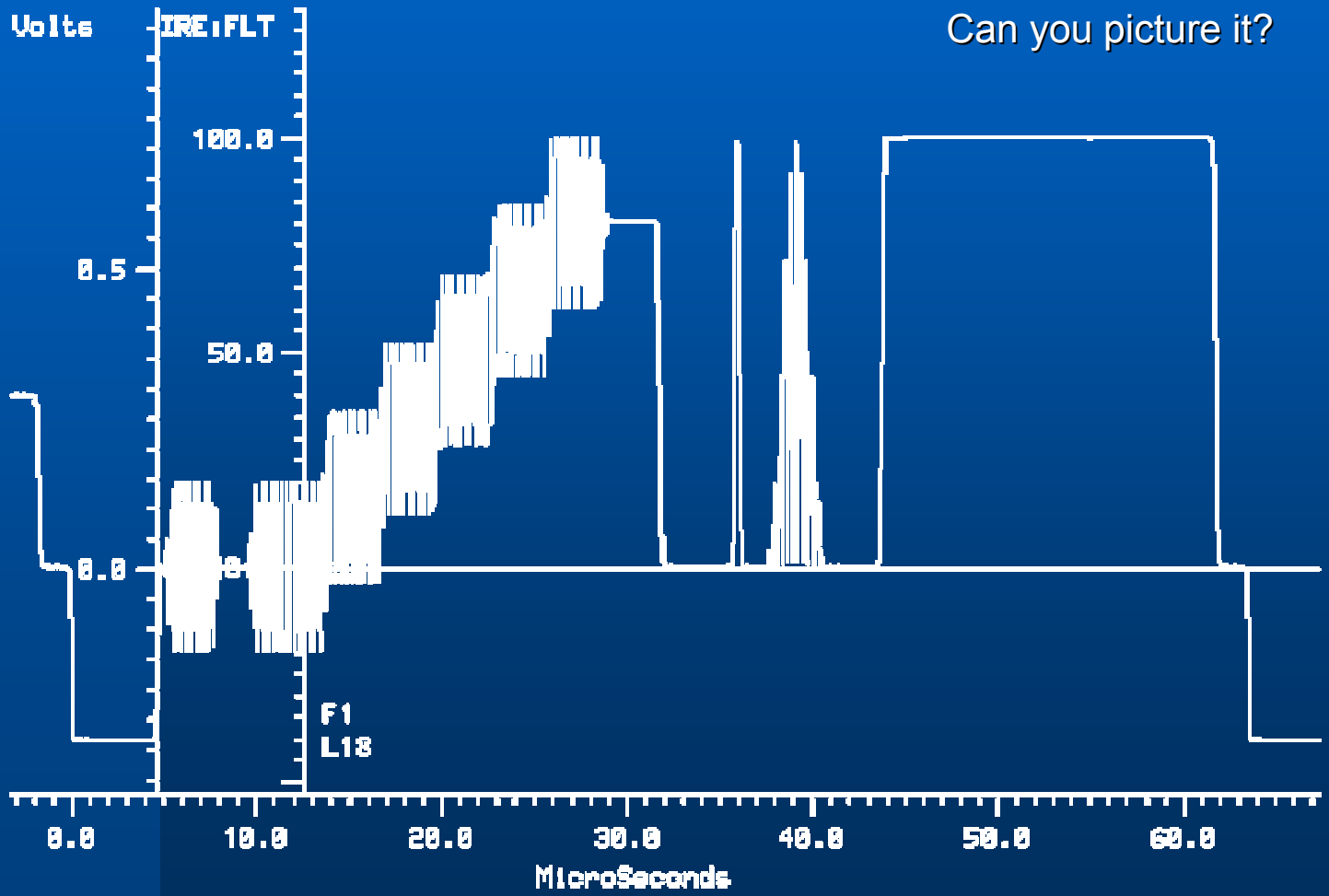
Background noise when signal weak

Analog

Infinite variations

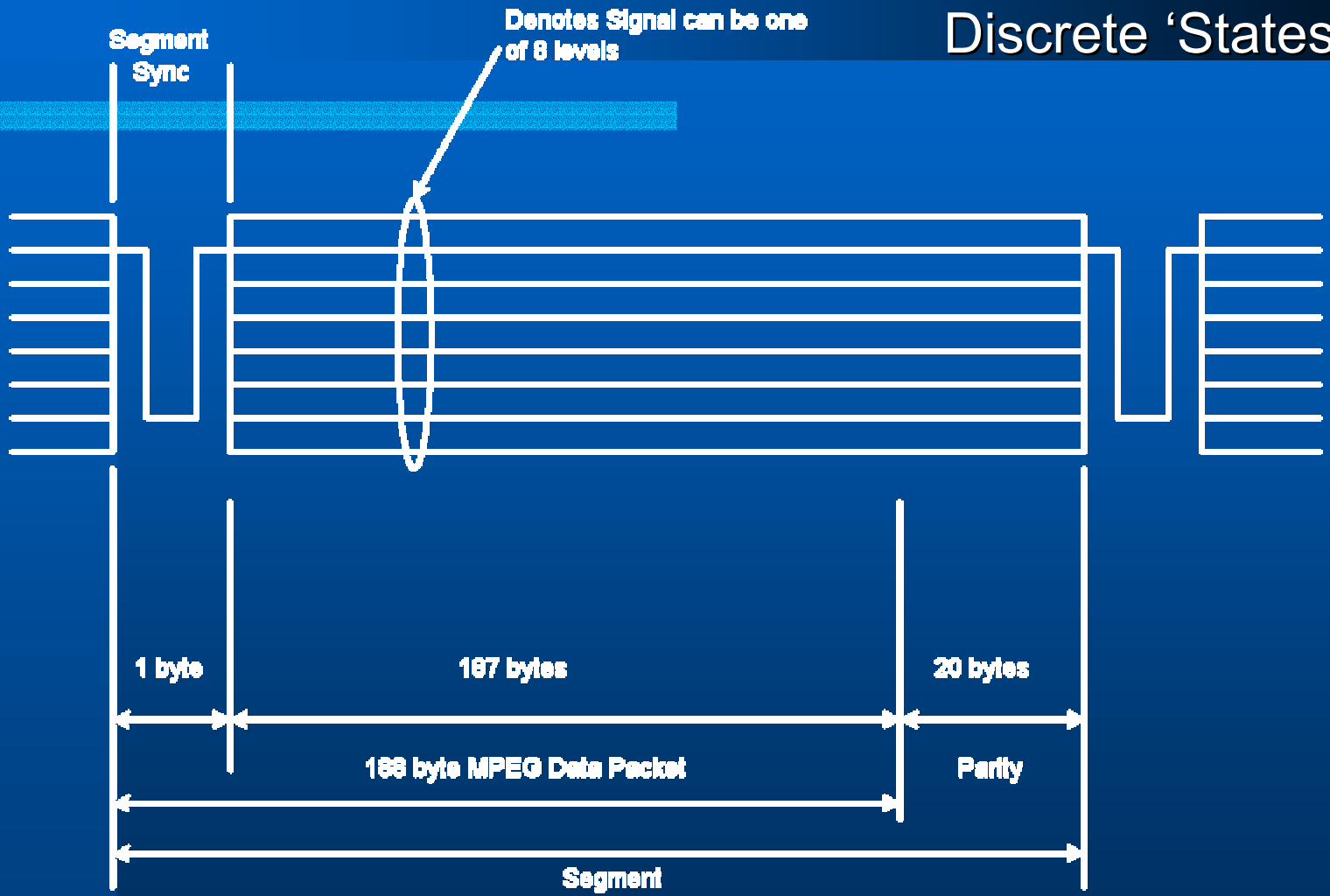
Familiar?

Can you picture it?



Digital

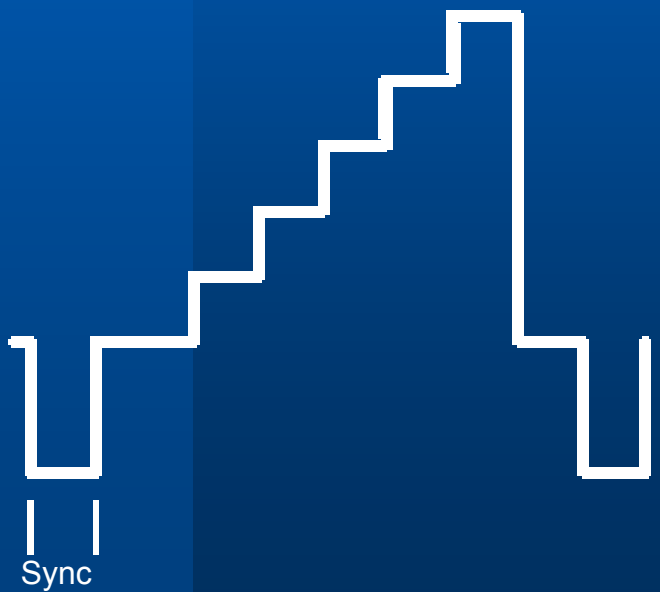
Discrete ‘States’



ANALOG SIGNALS AND NOISE

Objective:

Recreate/Reproduce the signal as closely as possible

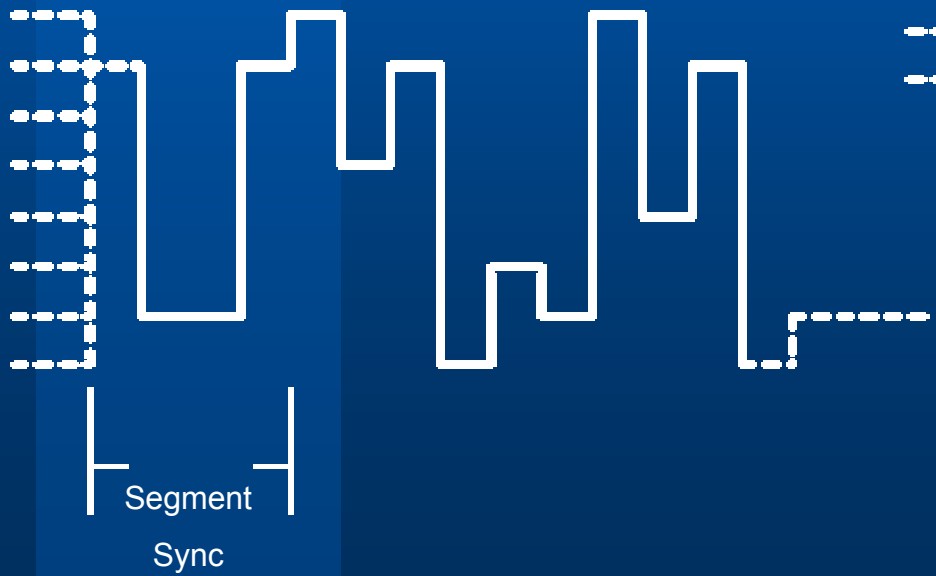


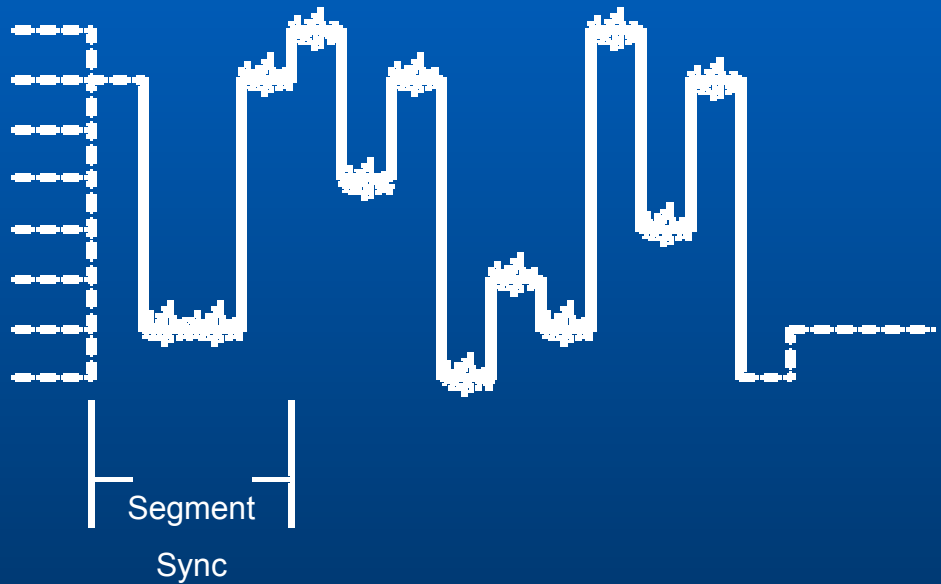
Noise shows up in the picture, or in the sound

DIGITAL SIGNALS AND NOISE

Objective:

Determine which ‘state’ was the intended one





As long as the noise is within limits, the receiver can determine which level

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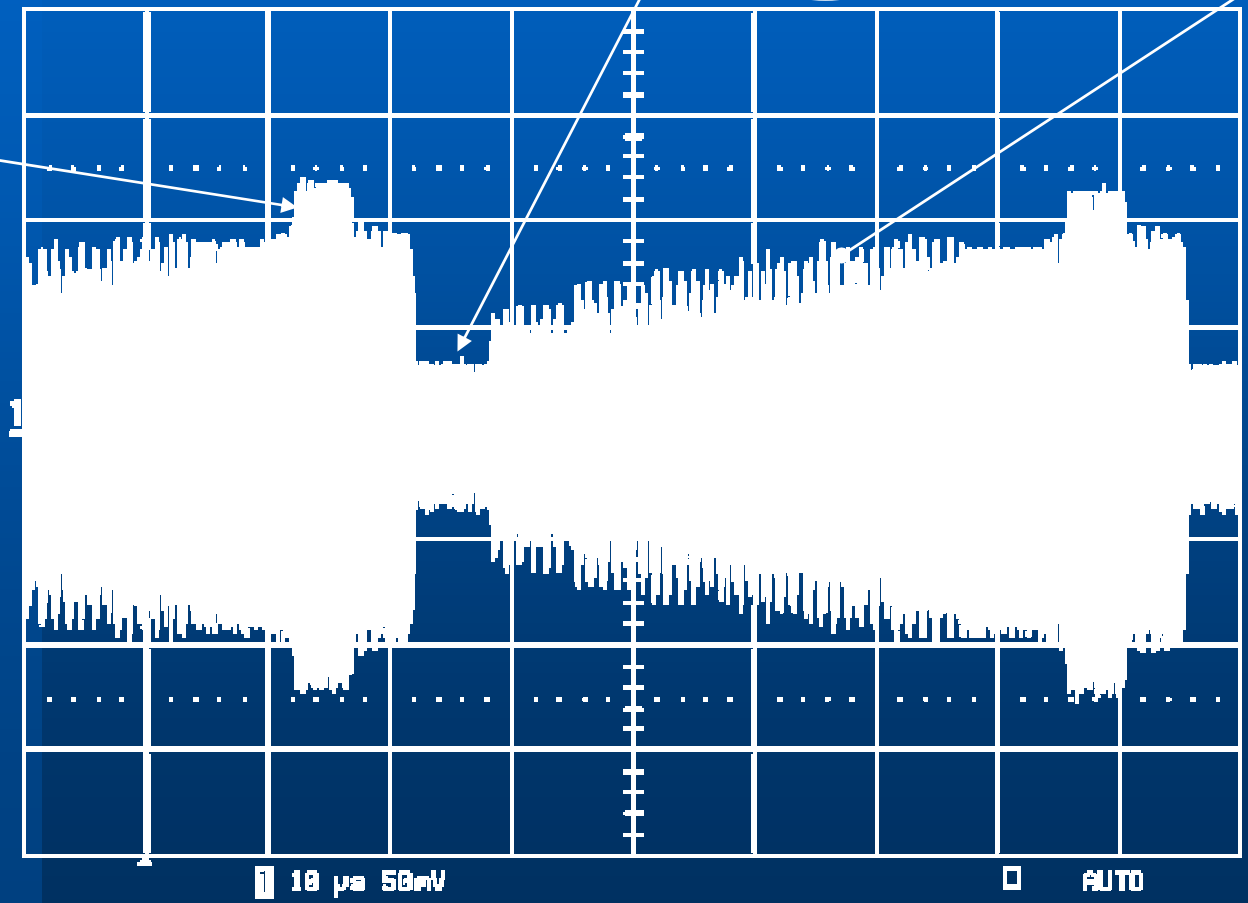
Recall: Analog

Periodic, Predictable Signal

No Zero Carrier Condition

Continuously Variable

Regular Sync Pulses



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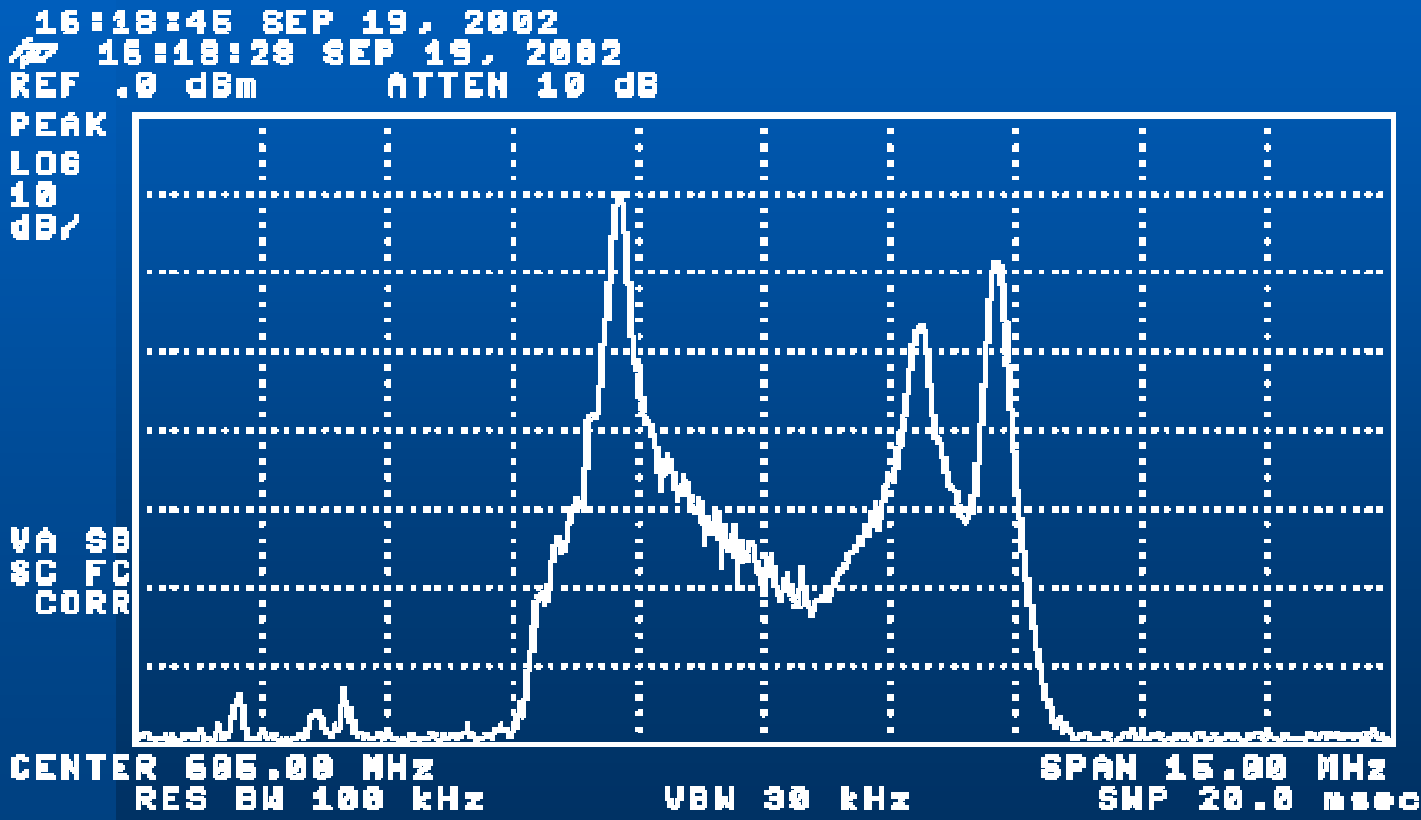
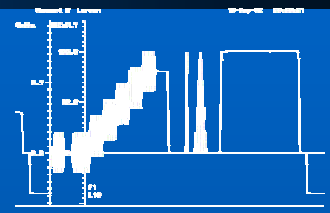
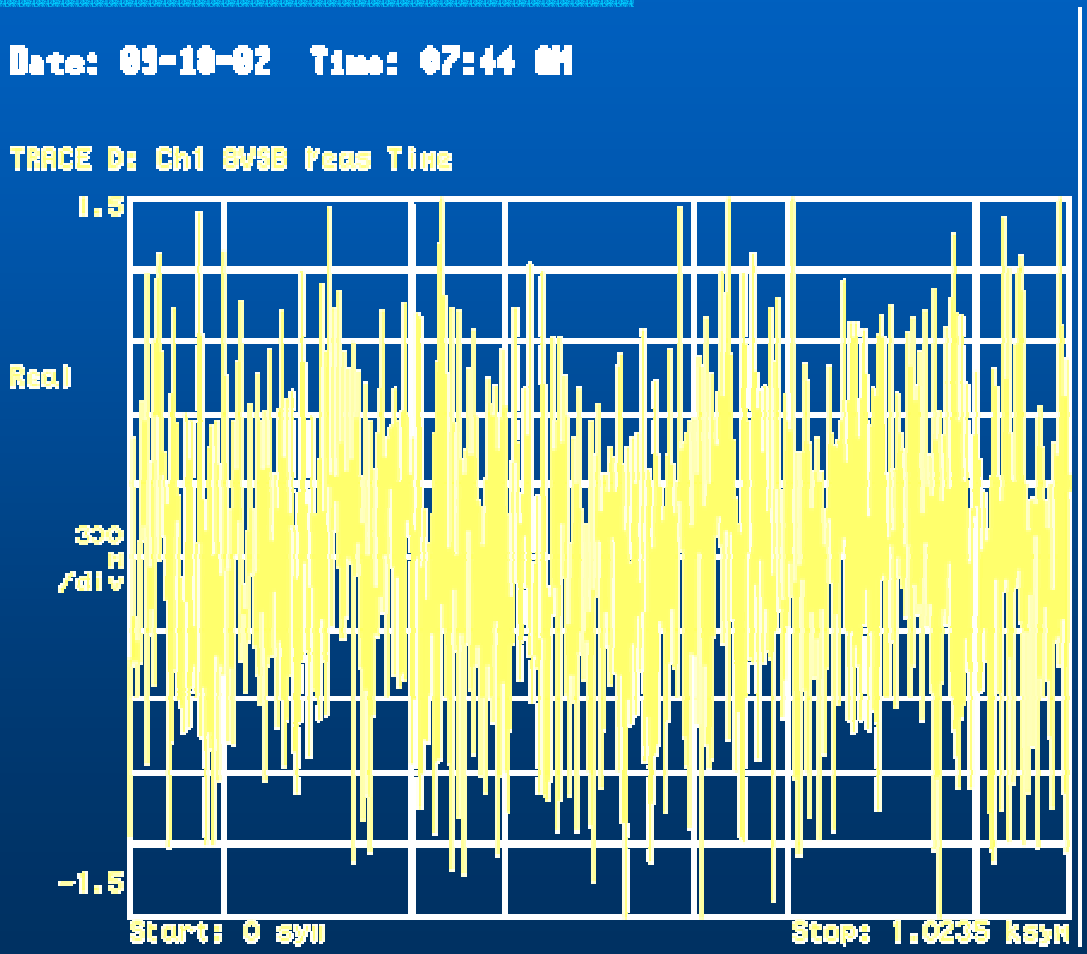
Analog TV Spectrum



Data Purposely Randomized





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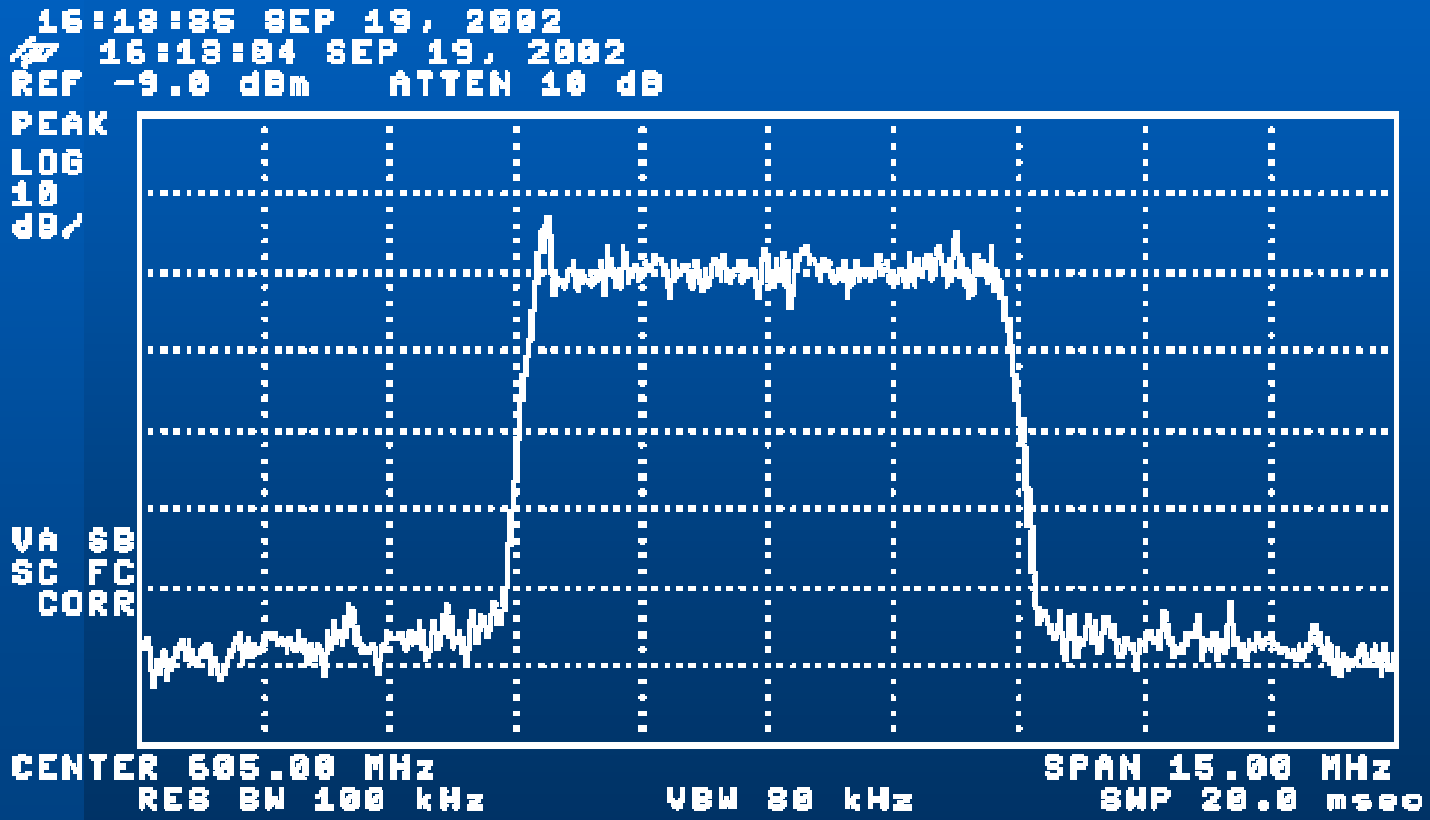
Digital TV Spectrum



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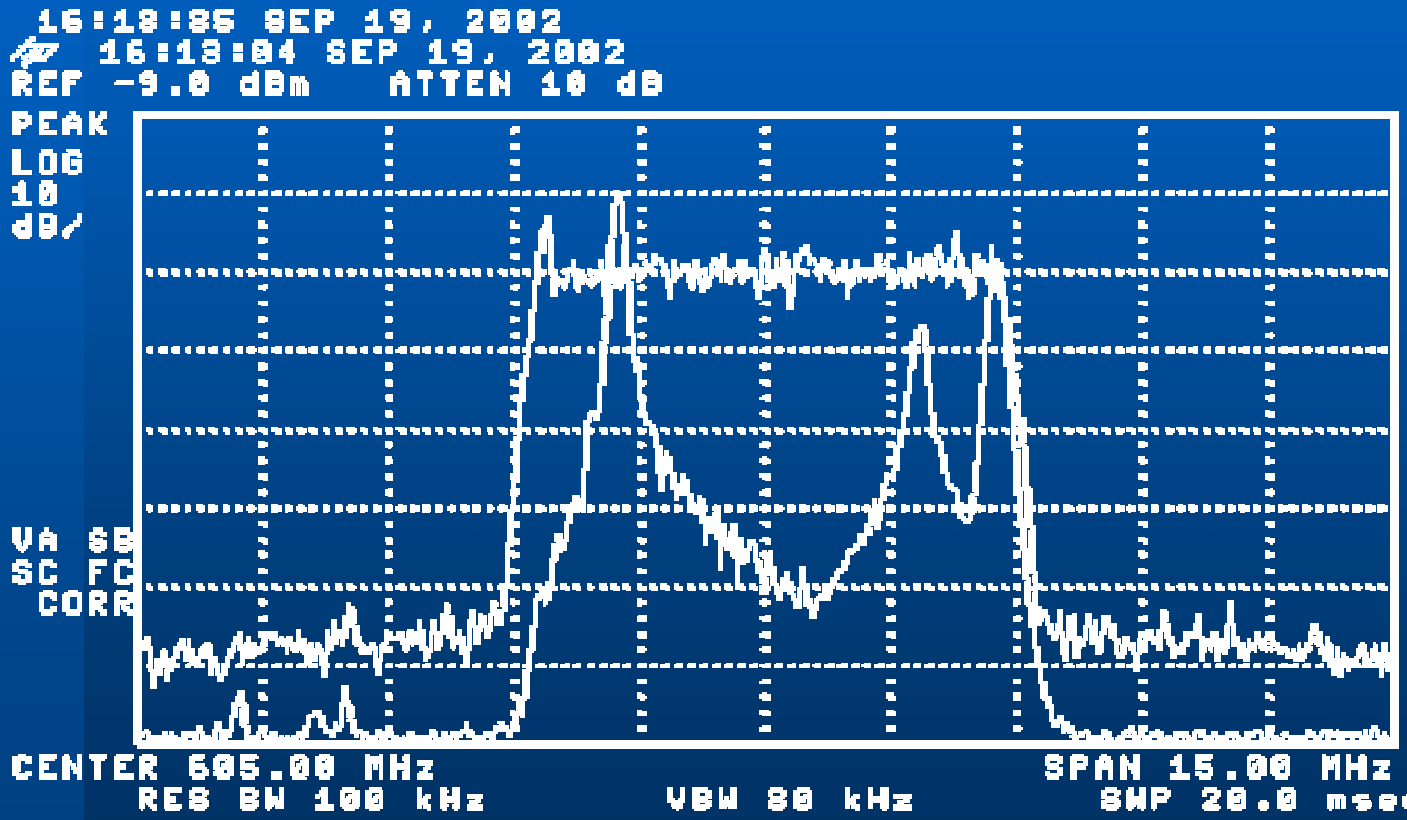
Digital TV Spectrum



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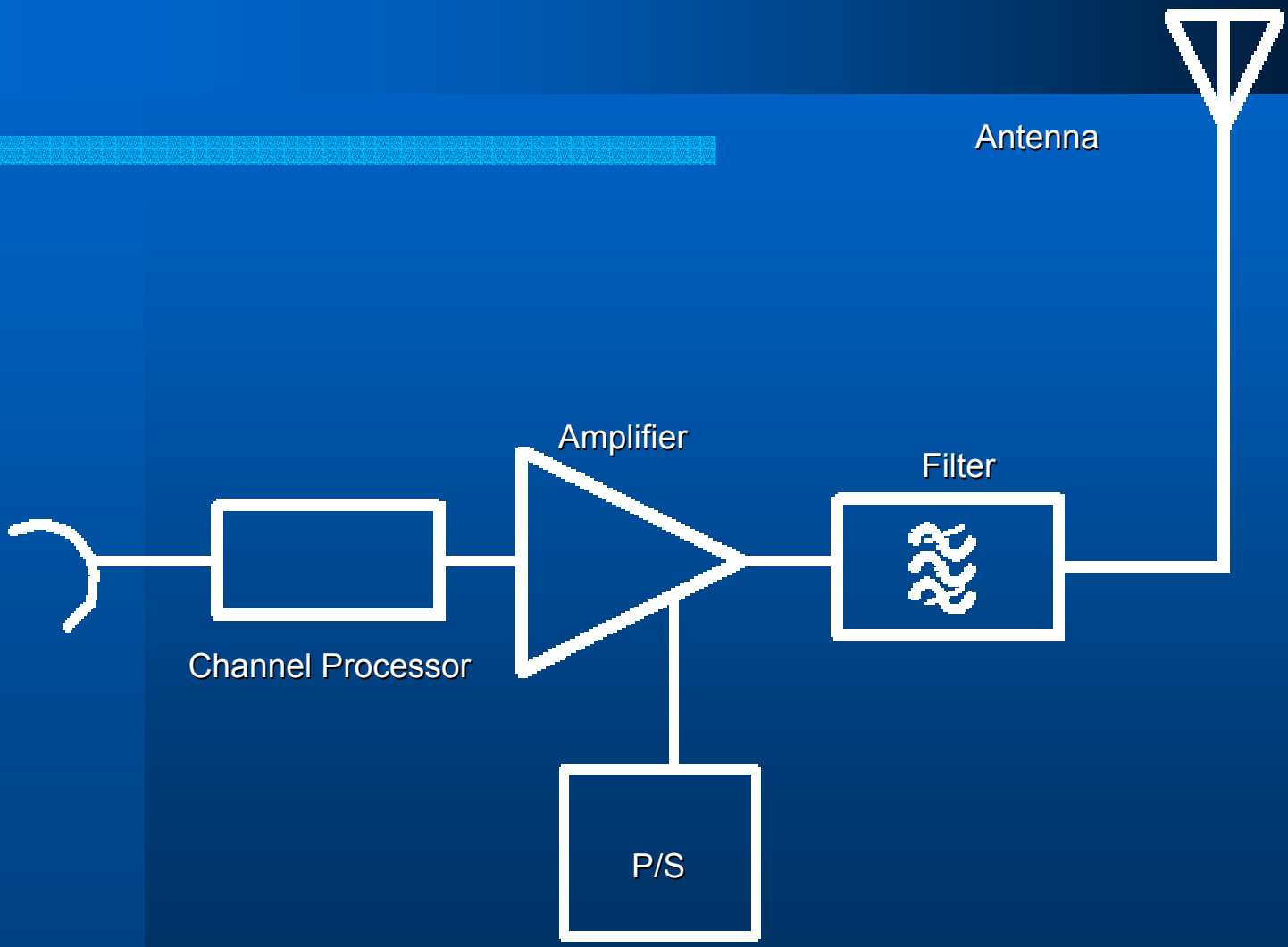
Translator Site



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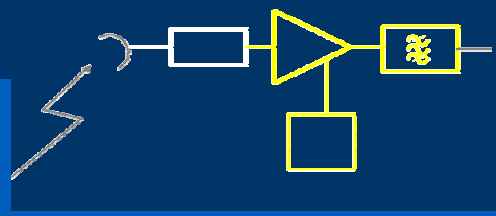
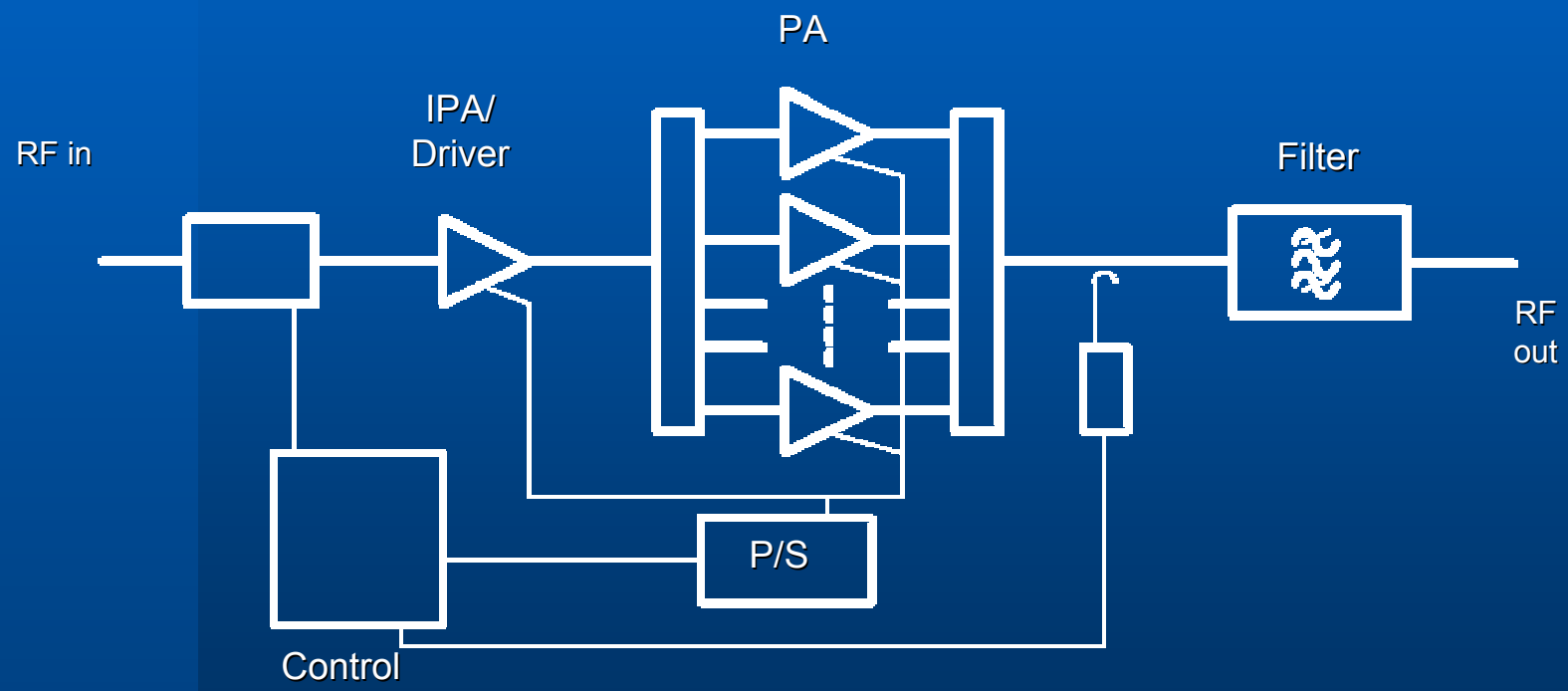
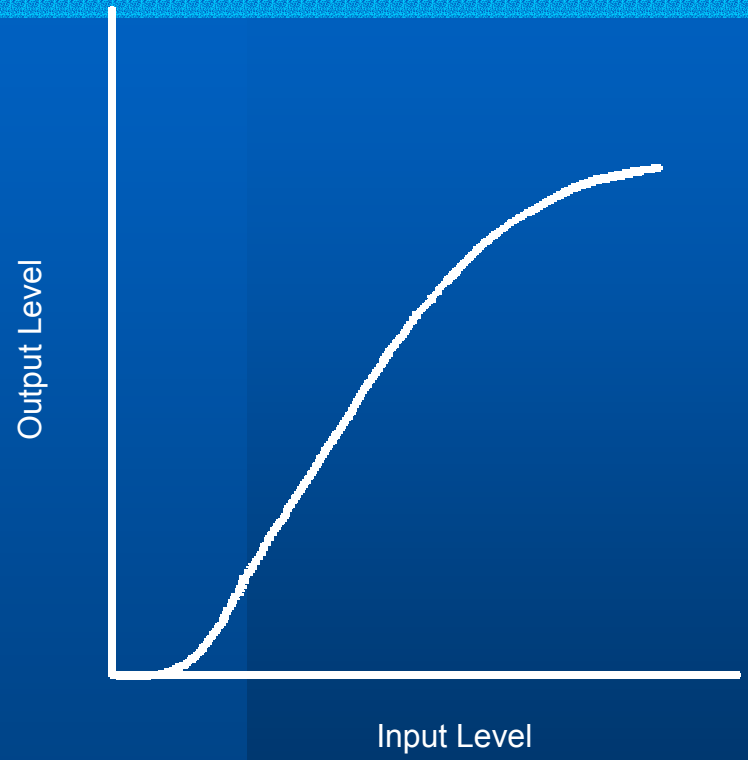
Translator Amplifier

Power Levels Required
vs.
Power Ratings?

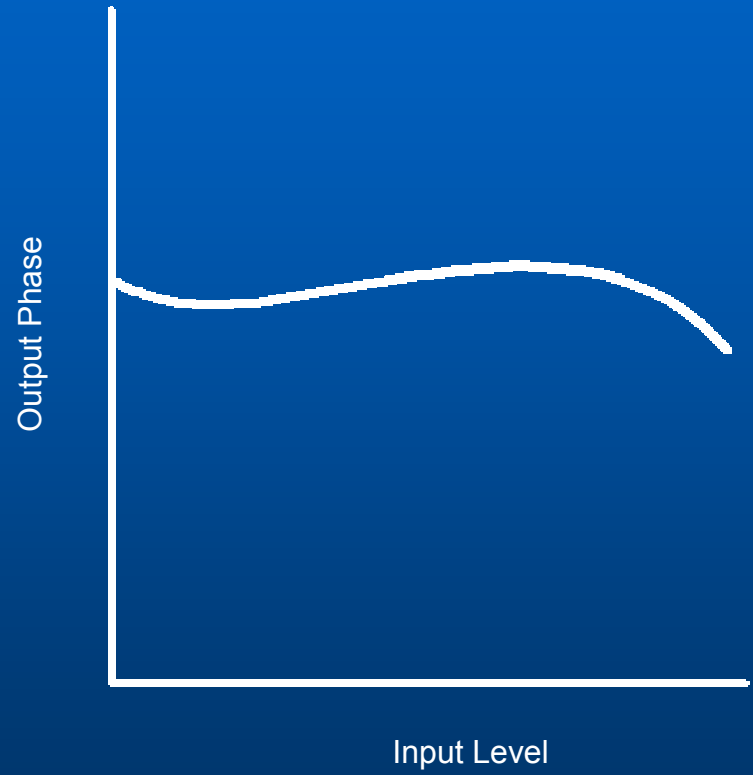




Performance



Amplitude Distortion



Phase Distortion

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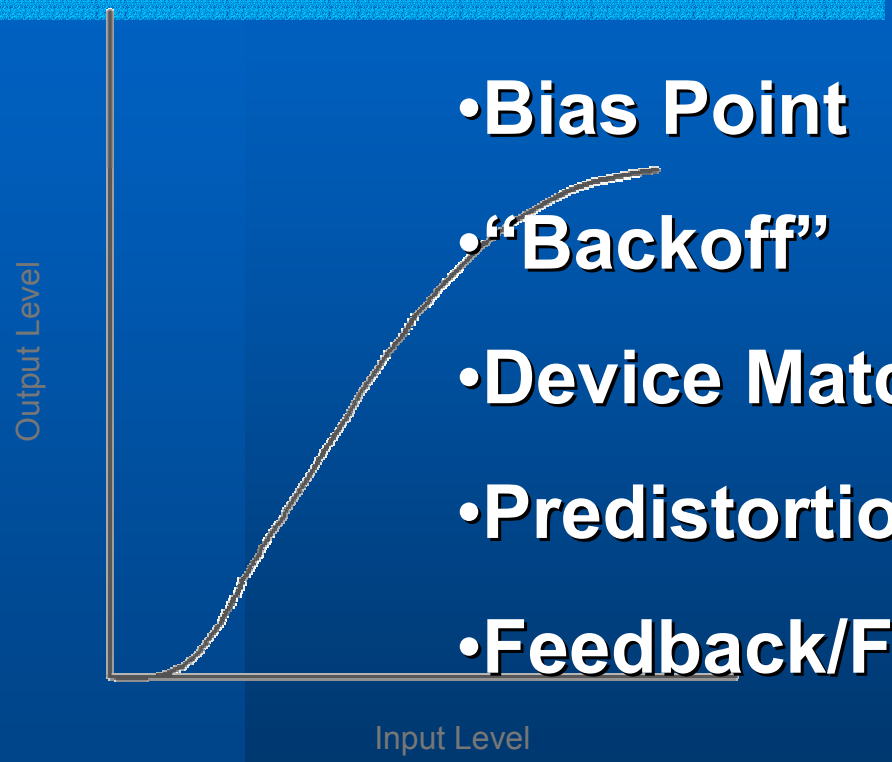
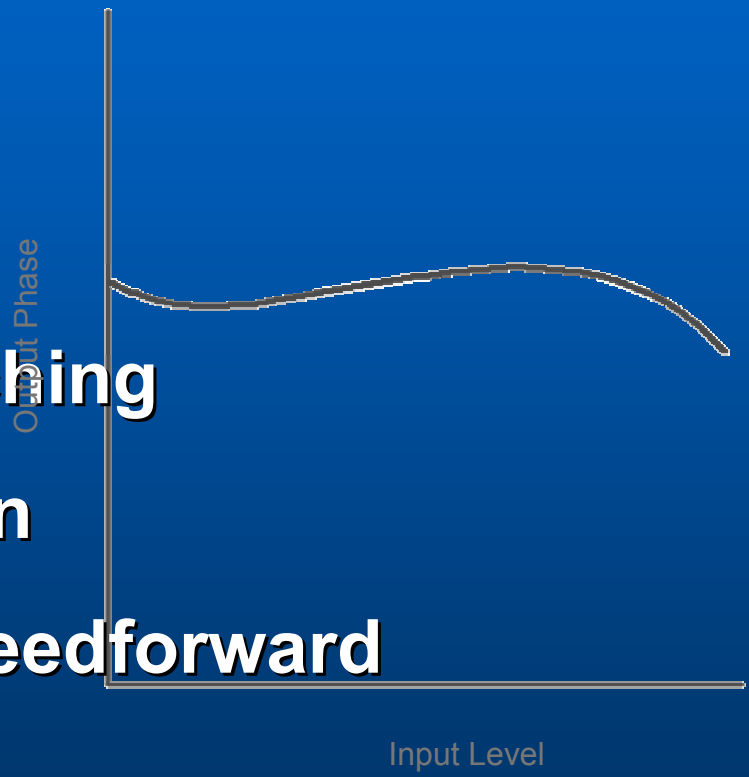
Performance

- Bias Point
- "Backoff"
- Device Matching
- Predistortion
- Feedback/Feedforward



Amplitude Distortion



Phase Distortion

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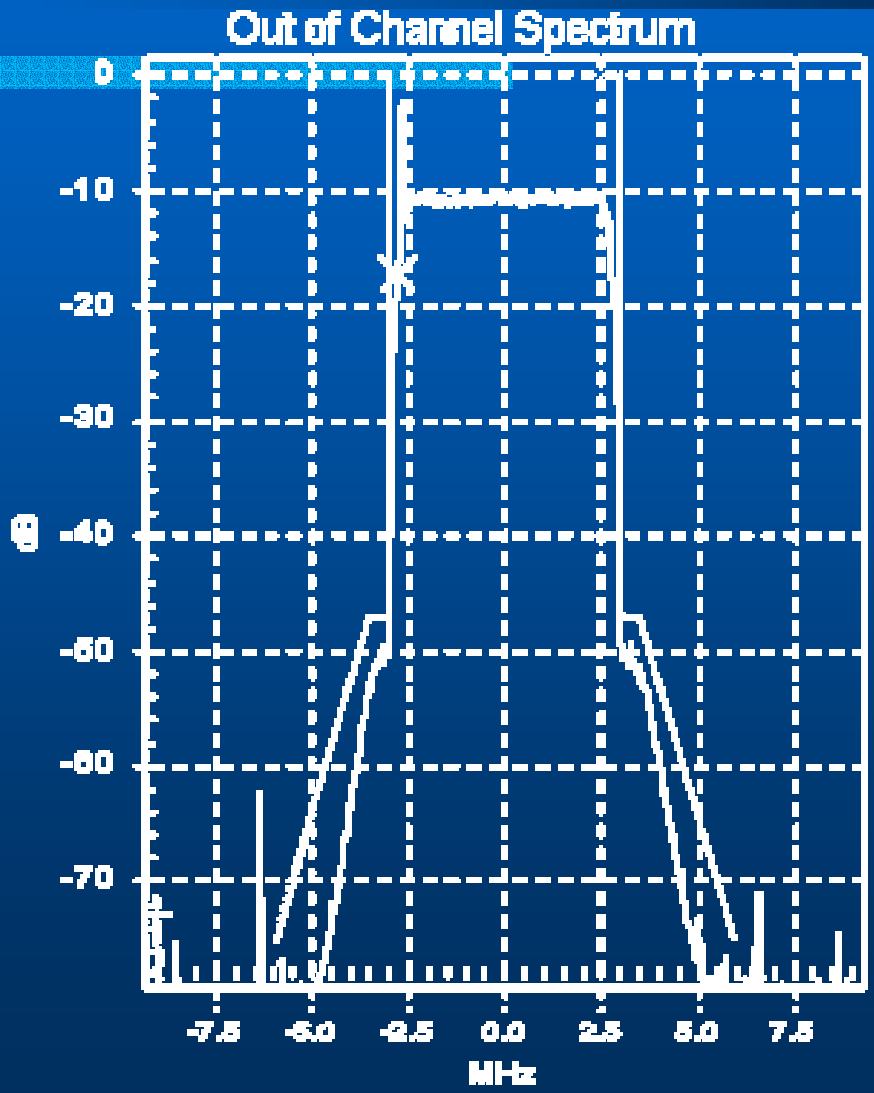
Spectrum Mask



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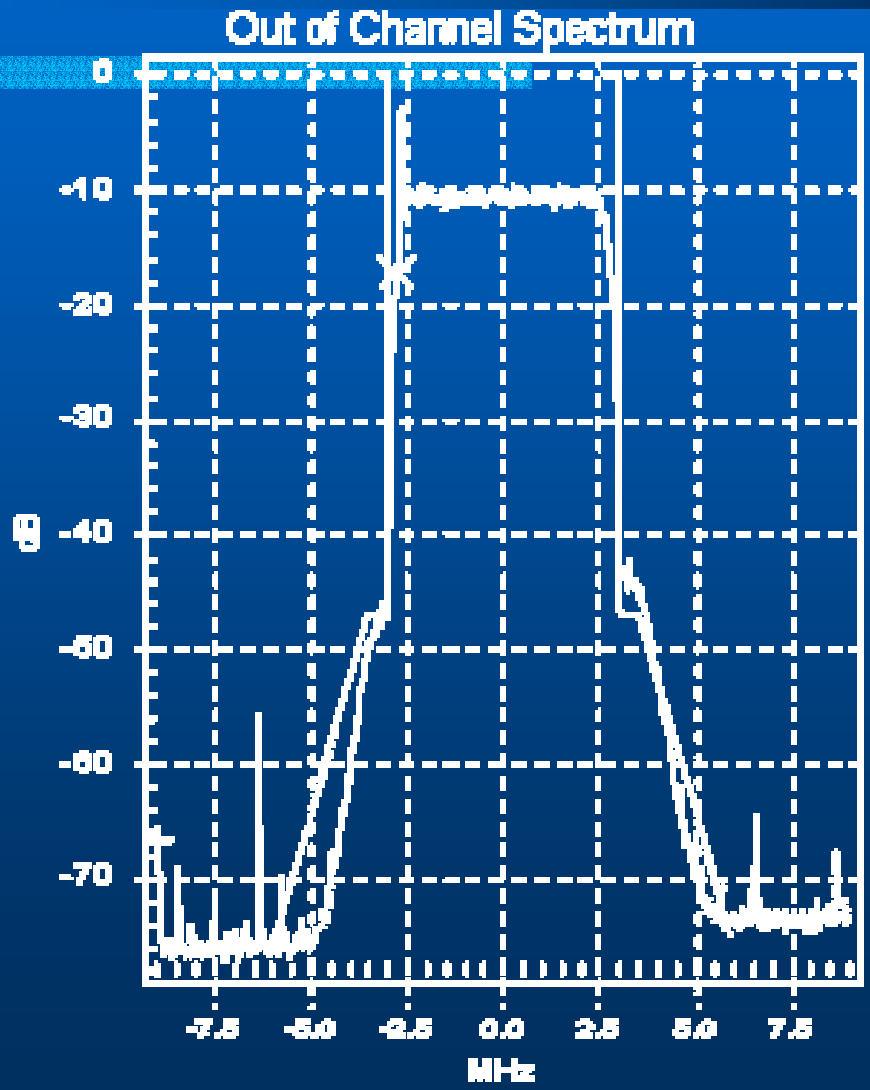
Over-Driven



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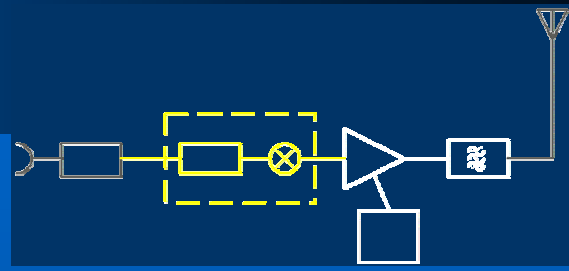
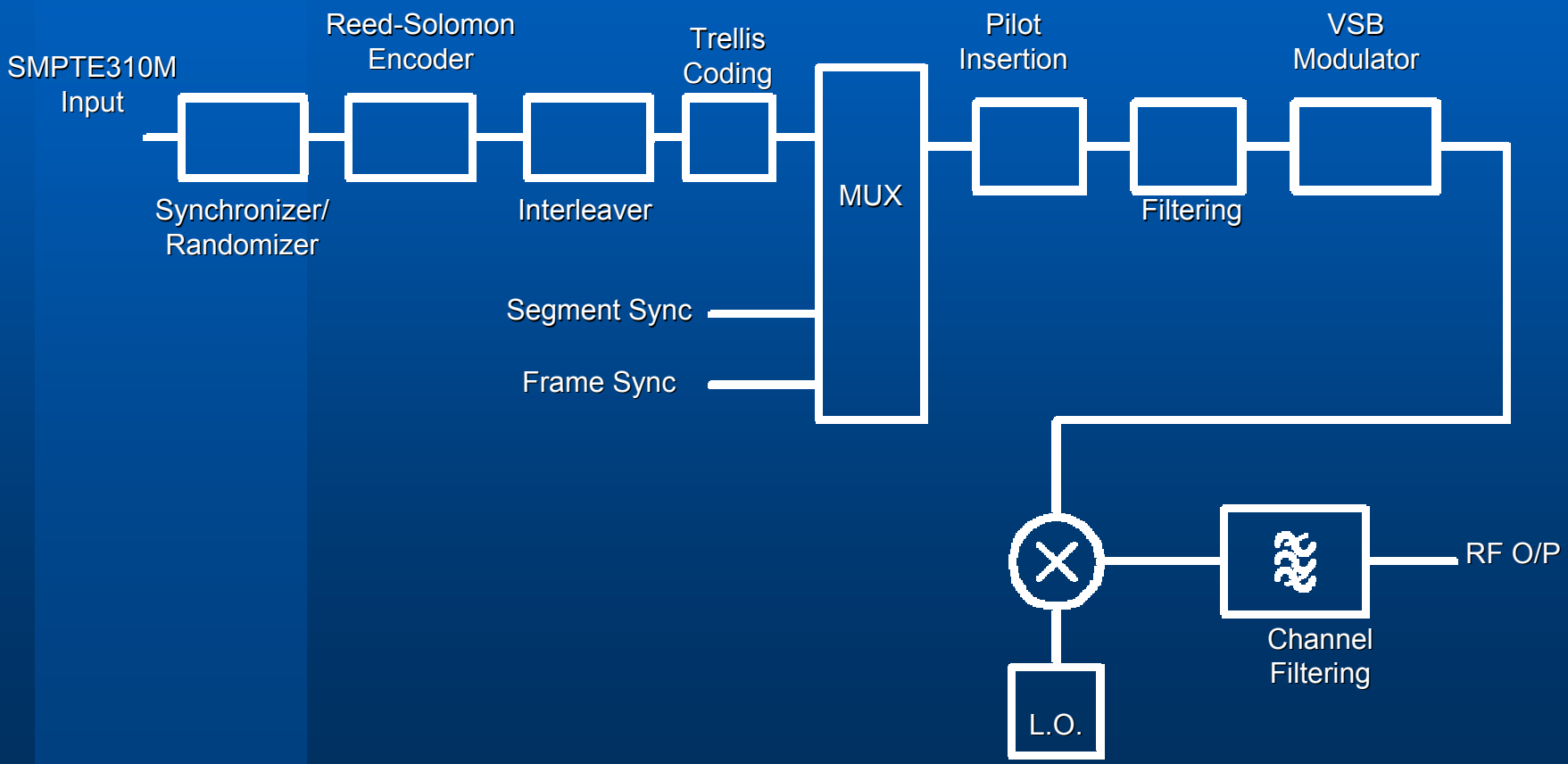
Digital Exciter





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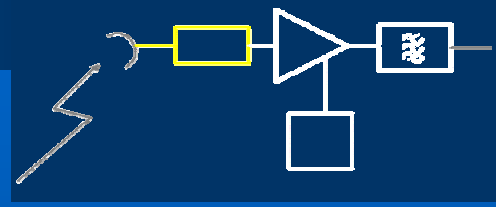
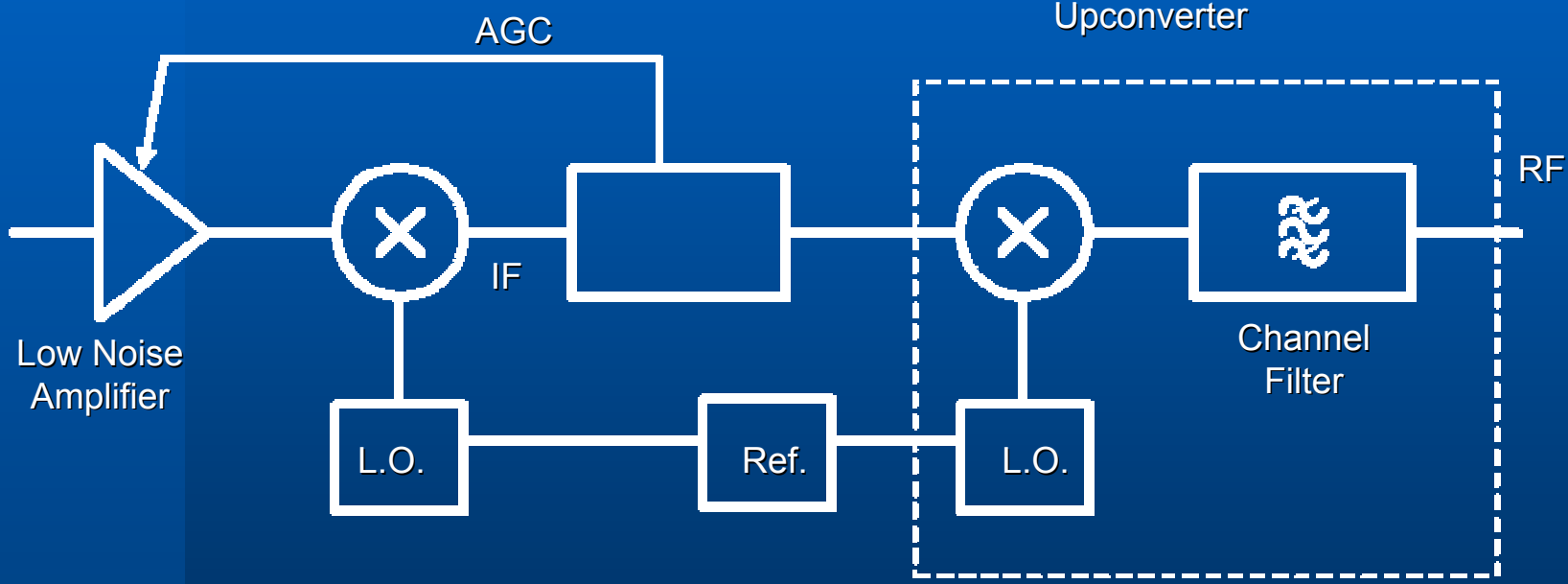
Analog Channel Processor





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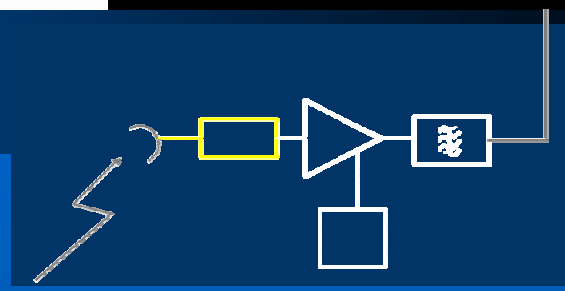
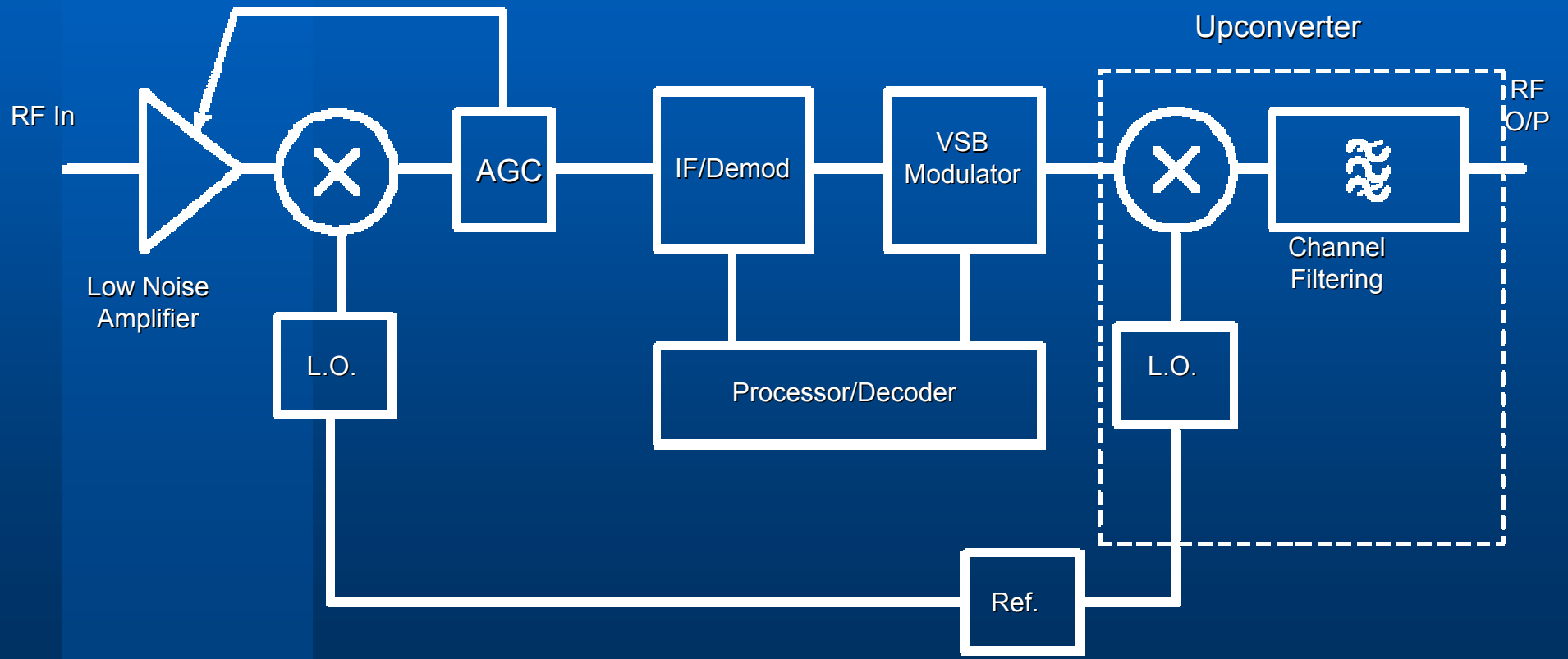
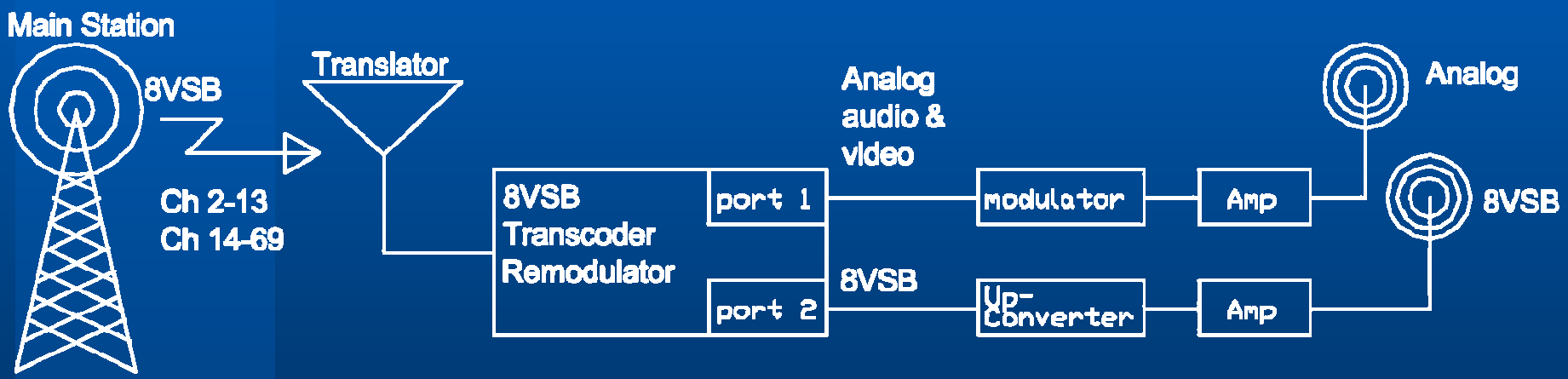
Digital Translator





Other 'Interim' Applications



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This workshop/seminar was presented by LARCAN-USA in association with

Larry Bloomfield who can be contacted at:

BLOOMFIELD ENTERPRISES, LLC

dba **Tech-Notes**

1980 25th St.

Florence, OR 97439-9717

(541) 902-2424

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