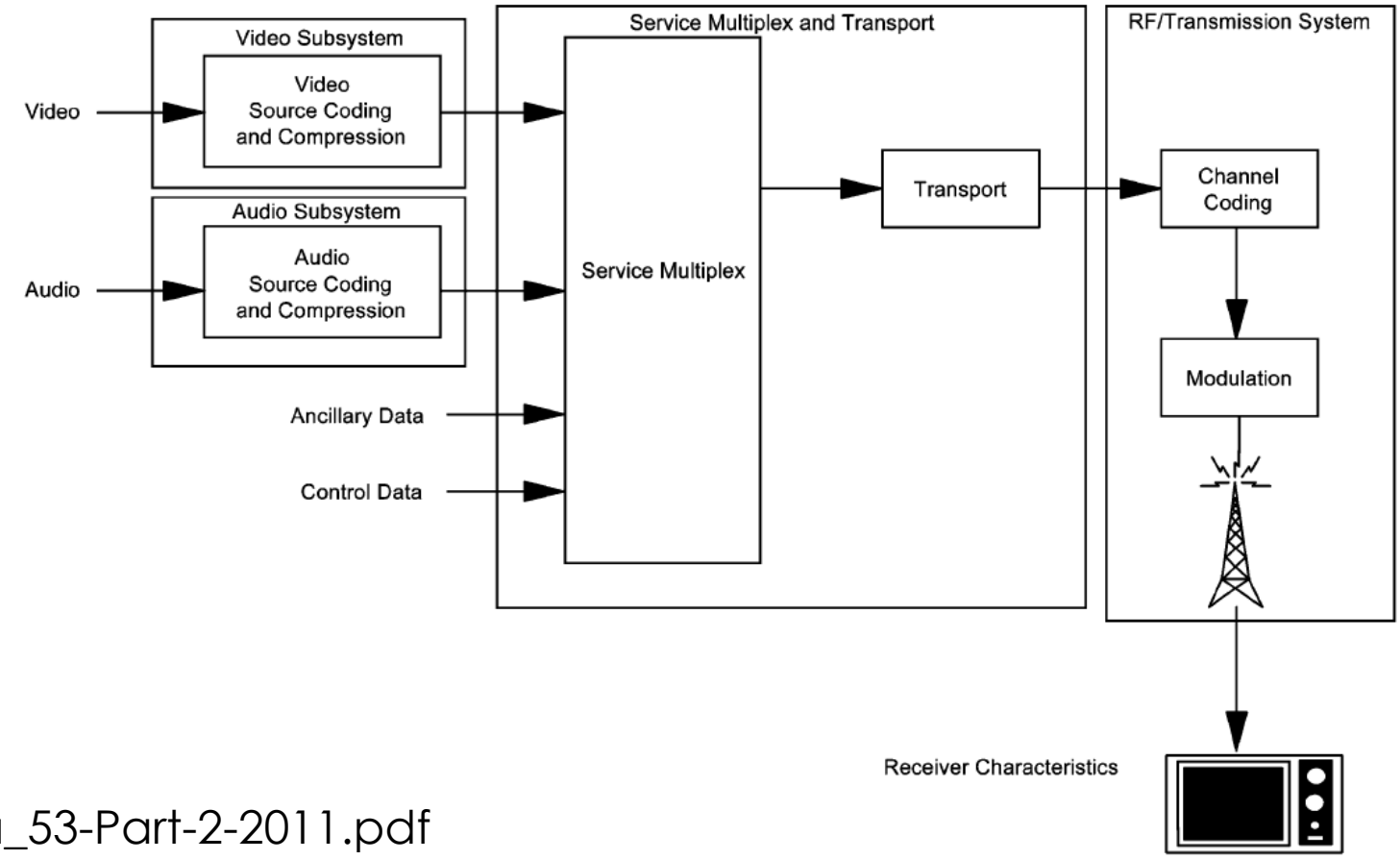
ATSC

TV But Better

General Information

- ATSC is a standard for DTV and HDTV broadcasting
- Extensive Standards
- Also applied to mobile devices

System Architecture



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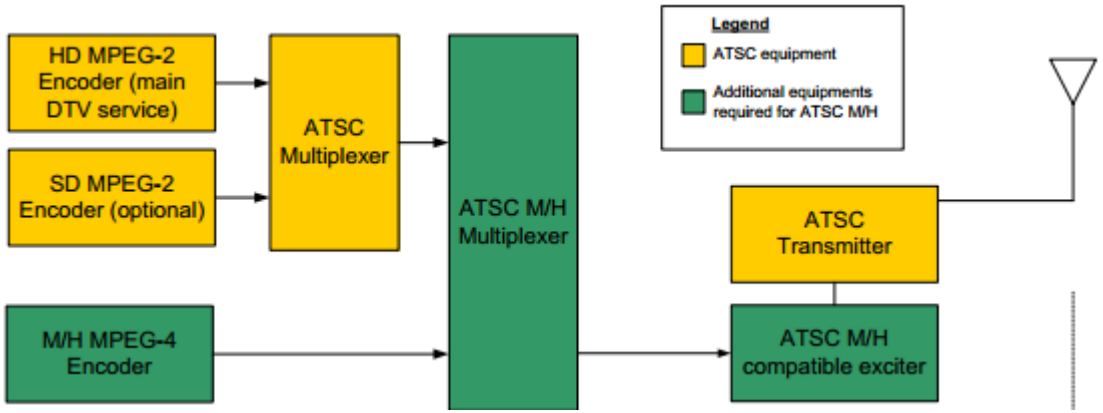
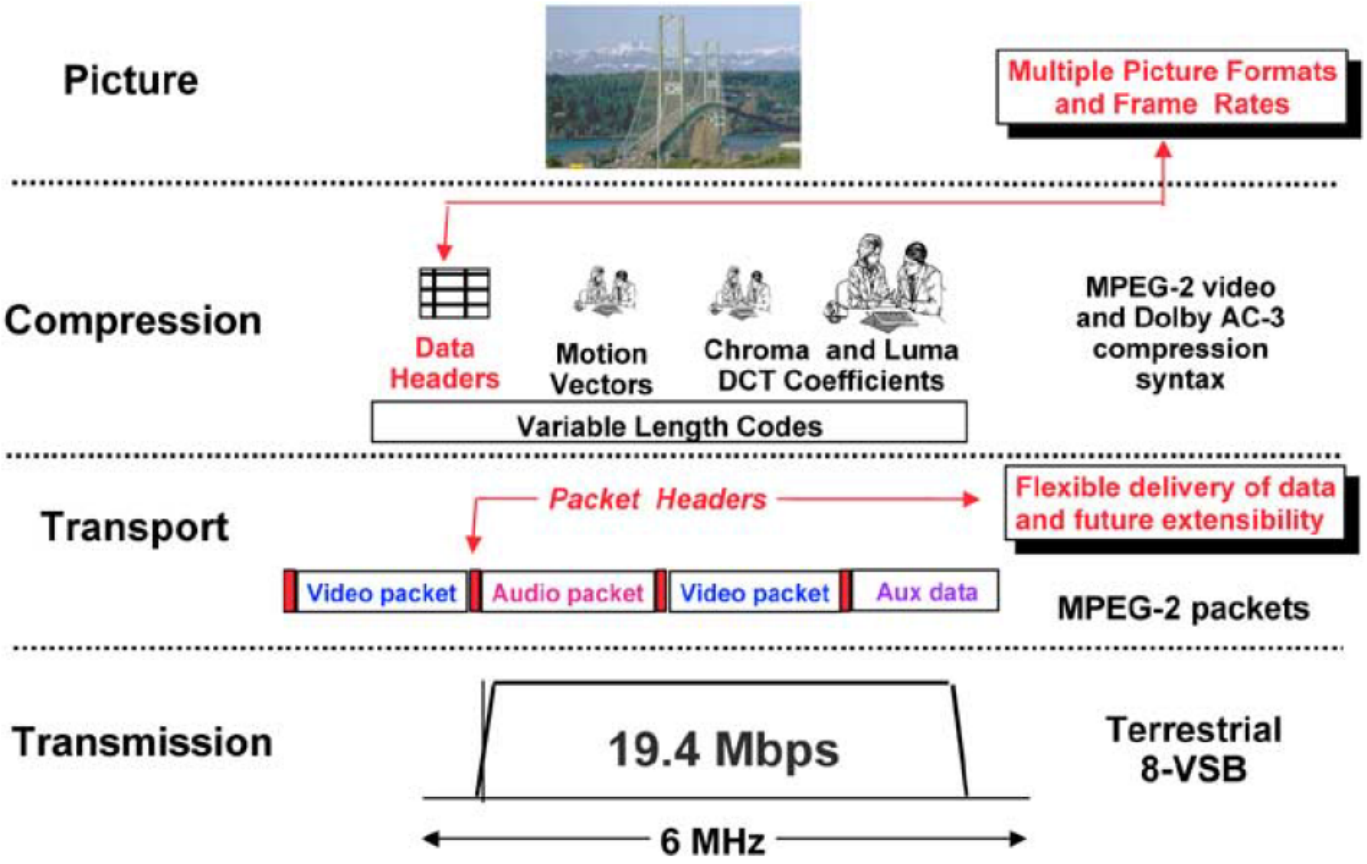
System Architecture (M/H)



http://www.cbc.radio-canada.ca/_files/cbcrc/documents/sync/issue3/er12-041-mobile-dtv-atsc-mh-field-testing-and-measurements.pdf

System Architecture



Standards

- Advanced Television Systems Committee
- Founded by members of JCIC
  - IEEE, EIA, NAB, NCTA, SMPTE
- Represent broadcast, motion picture, consumer electronics, computer, cable, satellite, and semiconductor industries
- VOLUNTARY STANDARDS!

Sponsors of this Standard?

Compliance?

It's voluntary but if you want to prove compliance…

ATSC Recommended Practice:
Transmission Measurement and Compliance for Digital Television

Document A/64B, 26 May 2008

Dollar, Dollar, Big M

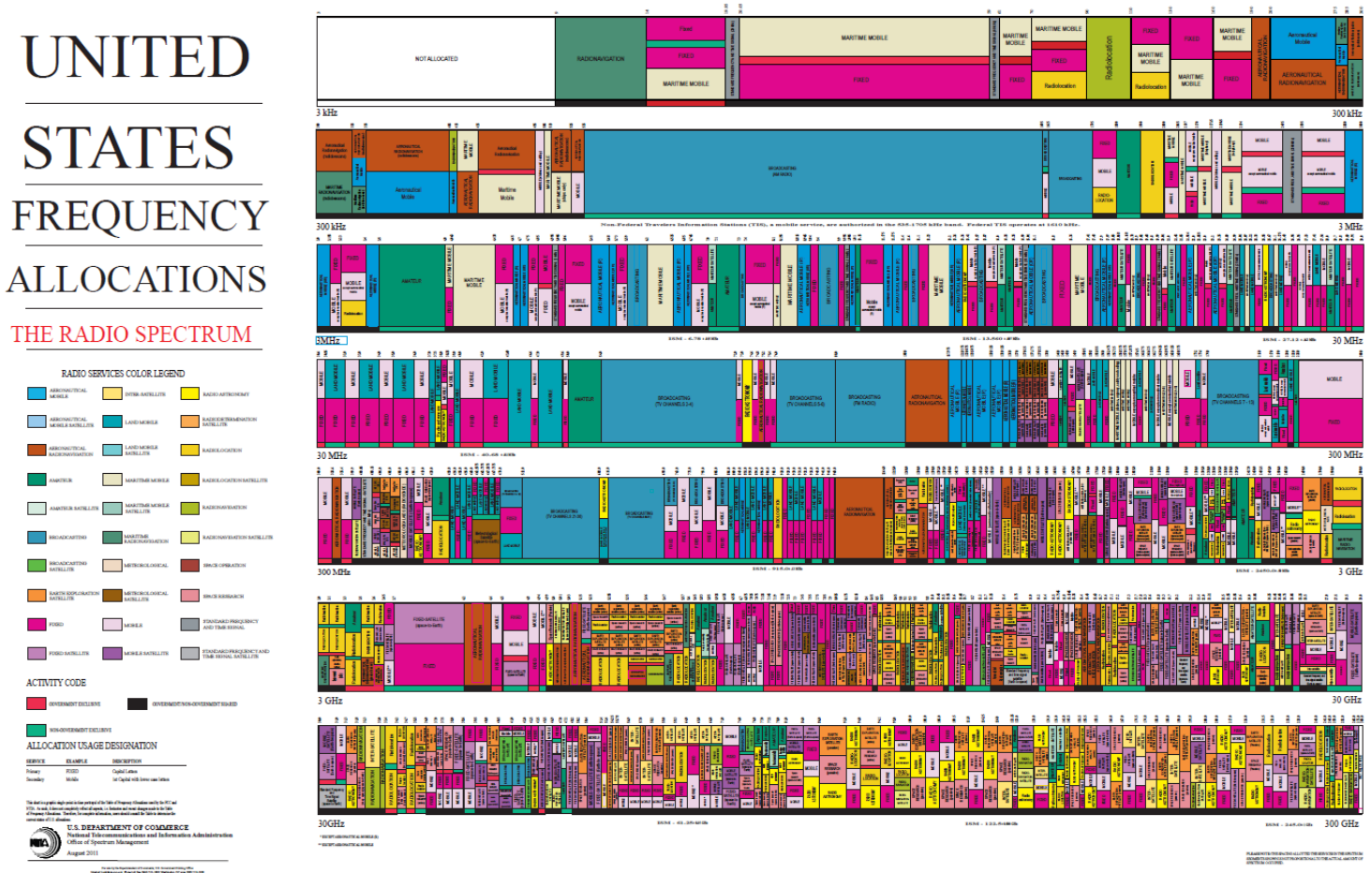
- Population of Canada = 35 Million
- Everyone has a TV and is being moved to digital TV
- Digital TV costs approximately $100/month

35 Million * $100 = $3.5 Billion each month

But…

- Unfortunately for ATSC they are a non-for-profit organization….
- That means that other people are making big money off of their standard

Frequency Bands



Frequency Bands

- 54.31 – 82.31 MHz
- 174.31 – 210.31 MHz
- 470.31 – 800.31 MHz
- 6 MHz bandwidths (NTSC Standard)

Data Rate

- 19 Mbps throughput terrestrial
- 38 Mbps throughput cable
- "Complex video and audio compression technology" to hit the data rate for HD
- MPEG-2 and AC-3
- MUX for broadcasting – ISO/IEC 13818-1

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Error Protection

- Terrestrial broadcast mode error protection consists of:
- data randomizing,
- concatenated RS encoding,
- convolutional byte interleaving
- trellis coding and intrasegment symbol interleaving

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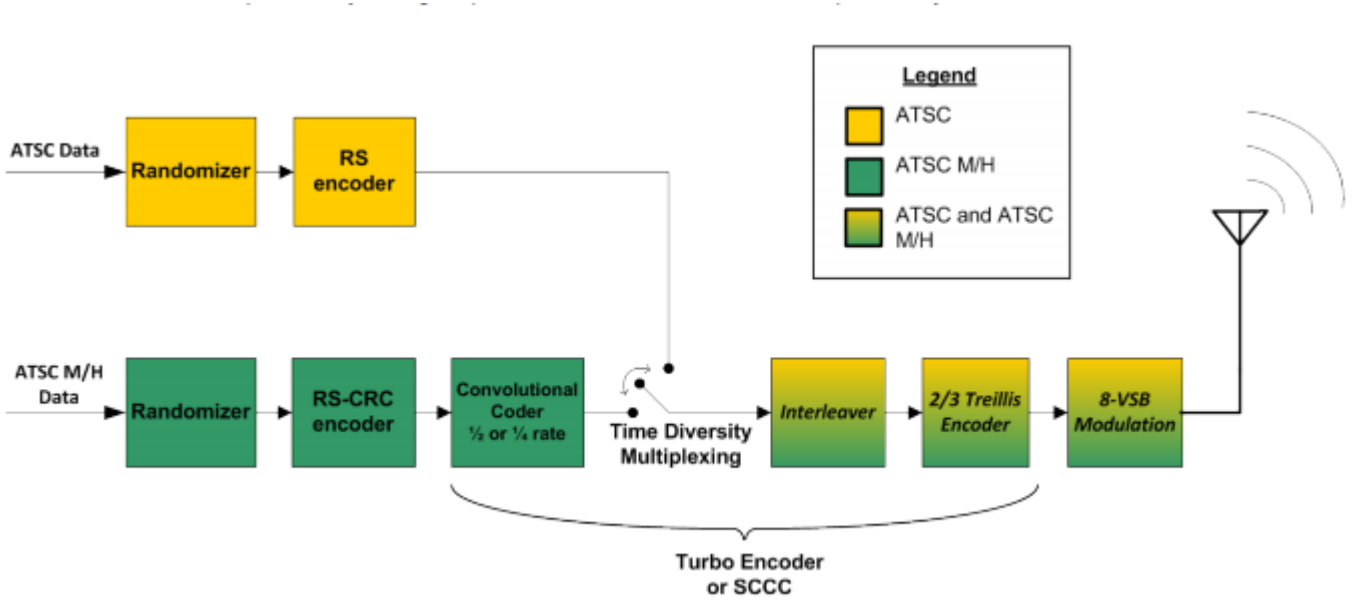
Error Protection



http://www.cbc.radio-canada.ca/_files/cbcrc/documents/sync/issue3/er12-041-mobile-dtv-atsc-mh-field-testing-and-measurements.pdf

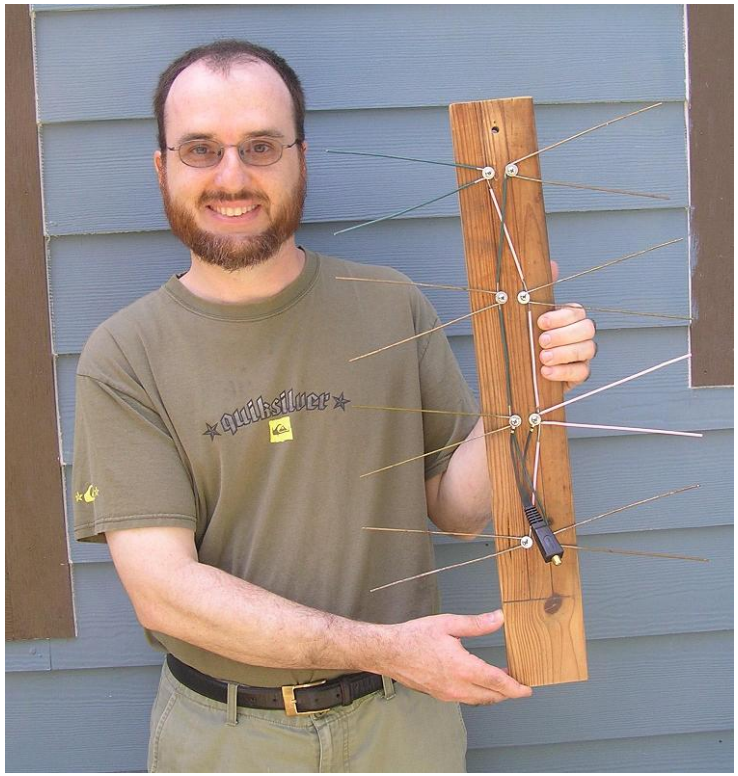
Link Budget

Parameter	UHF
Geometric Mean Frequency	615 MHz
Receiver Noise Figure (F)	7 dB
Noise 6 MHz (Nt)	-106.2 dbm
Noise Rx Input	-99.2 dBm
Min required (C/N)	15.2 dB
Min Signal Rx Input	-84.0 dBm
Line Loss (L)	4 dB
Min Signal Power Antenna	-80 dBm
Dipole Conversion Factor(FCC Kd)	130.8 dB
Min Field Strength dBu	50.8 dBu
Gain Antenna (G)	10dBi
Min. Field Strength	**40.8 dBu**

Table 1 FCC A/53 Planning Factors

http://www.rohde-schwarz.ca/file_14460/mh2_wp-v1.pdf

So....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So….

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