

VHF Antenna Systems and Reception

A Study into the Improvement of Over the Air Television Antenna Systems

Mark J. Colombo

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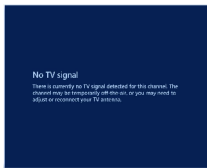
DTV Transition

- Japanese analog HDTV system in 1980s
- Digital HDTV system
- Original transition date: December 31, 2006
- First commercial station in 1997
- Deficit Reduction Act of 2005
 - Set February 17, 2009 as transition date
- Delayed in February 2009 to June 12, 2009

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DTV and its Problems

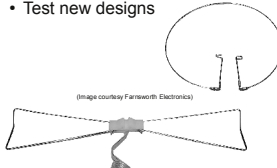
- Procrastination
- Severe VHF reception problems
 - Electrical noise
 - Weak signals
 - Poor antennas



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VHF Antenna Design

- Most are "rabbit ear" dipoles
- Project will scale UHF antennas
- Test new designs



(Image courtesy Fairweather Electronics)



(Image courtesy Free Stock Photos)

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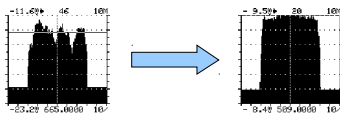
Testing Procedure

- Build several VHF antenna designs
- Test theoretical performance with software
- Test optimal real world performance
 - Using spectrum analyzer
- Test typical real world performance
 - Using spectrum analyzer and consumer receiver
- This test will provide most helpful information

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Desired Results

- Superior VHF antenna design
 - Maximizes signal level
 - Minimizes multipath reflections
 - Improves indoor reception

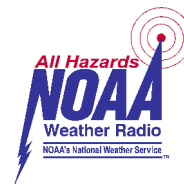


(Images produced on a Sencore SLM1450CM spectrum analyzer)

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Wider Implications

- Military uses
- National Weather Service radios
- Broadband services



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Conclusion

- Indoor VHF antenna design is worth study
- Spectrum analyzer demo after class
- Questions?



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