

Agilent Technologies Test & Measurement

ATSC Waveform Demonstration on the [33521A Arbitrary Waveform Generator](#)

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Background

Agilent Technologies offers a wide variety of tools for providing verification signals to new devices in development. Many of these devices are quite capable in a generic sense, and having good demonstrations of these technologies can provide a strong competitive advantage. Accessible technologies that many people have personal experience with and produce visible results, such as television transmissions, serve this purpose especially well and can be used for branding and other tasks as well.

Description

For this project, students will be performing the following:

- Develop a program that produces a normalized ATSC waveform on the 33521A waveform generator. It must:
 - Accept an image as input, such as a JPG or PNG file
 - Encode the image into a baseband ATSC-T waveform. This will entail:
 - Producing an MPEG2 frame
 - Encapsulating it in transport stream
 - Modulating it using VSB-8
 - Output the waveform using less than 16 million data points as normalized 16 bit signed integers into a file, and programmatically configure a 33521A waveform generator to output the baseband signal.

Desired Skills/Aptitudes

- MPEG2 Compression and Transport Streams
- Digital Modulation
- Programming language can be student's choice yet Matlab, C++, or C# is preferred.

What's in it for you?

- You'll get to work with the latest technology from one of the industry's largest names in electronic test and measurement.
- You'll get an understanding of the heart of broadcast television.
- Hardware/Software interaction. This isn't just about moving bytes around in memory, it's about constructing physical signals and connecting instruments directly to your television set.

Location - Location is flexible. We expect that a visit may be desirable to our location at: 9780 S Meridian Blvd, Englewood, CO 80112