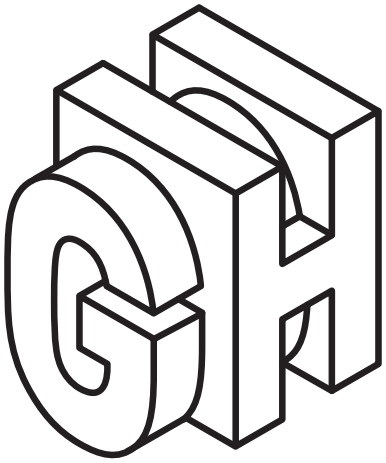
about us

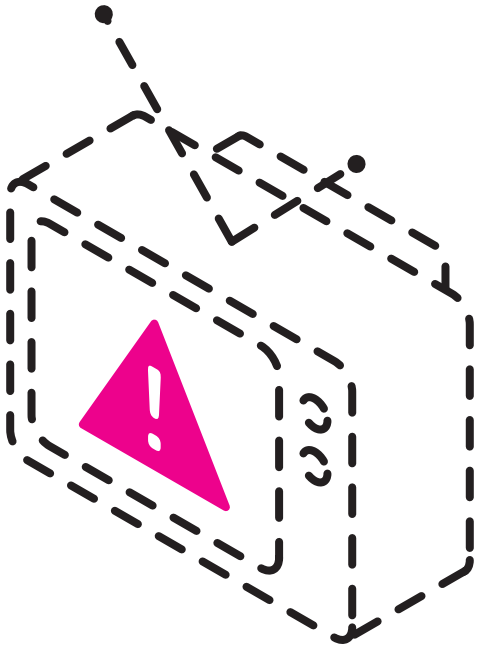
We (Matt Brucker and Evan New-Schmidt) are students at Olin College of Engineering in Needham, MA. We've been working on this broadcast project as part of The Greenhouse, an Olin initiative led by Jeff Goldenson to build collaborative relationships with institutions in the Boston area.



links

[1] https://electronics.howstuffworks.com/tv12.htm
[2] https://www.blondertongue.com/am-60-550.html
[3] https://www.fcc.gov/media/radio/low-power-radio-general-information
[4] https://greenhouse.olin.build/projects/balloon/

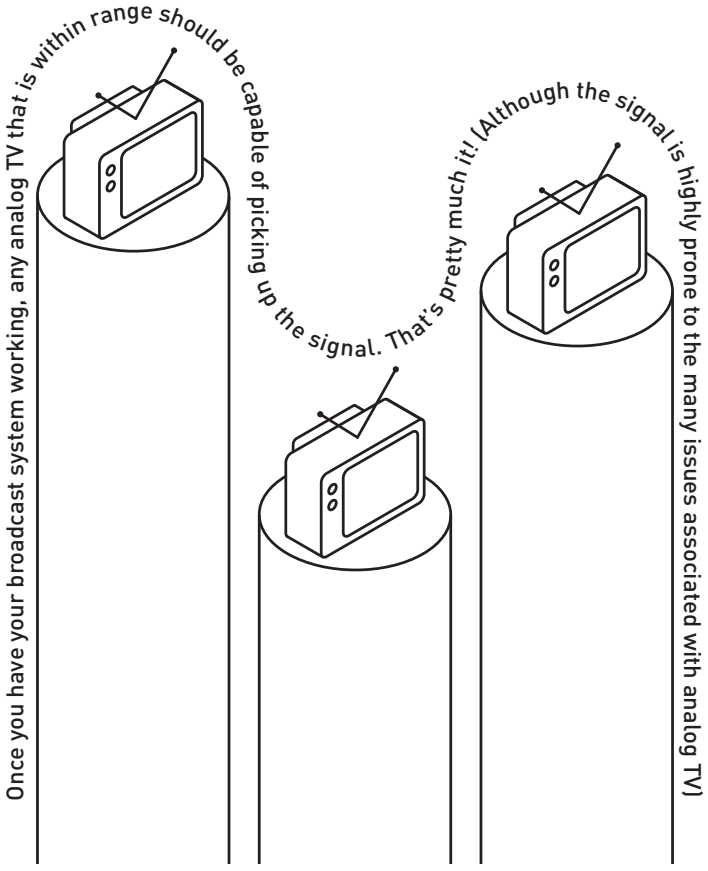
HYPERLOCAL TV



A PRIMER ON SHORT-RANGE ANALOG BROADCAST

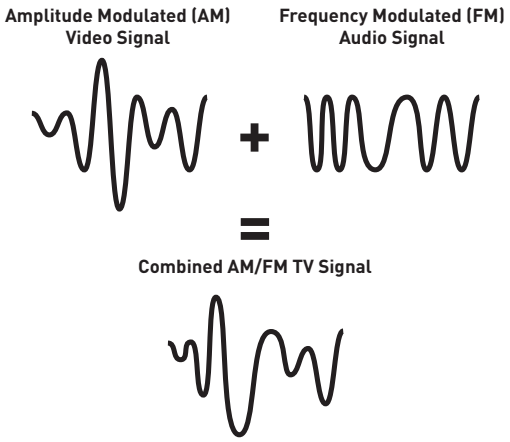
by matthew brucker and evan new-schmidt

all about television(s)

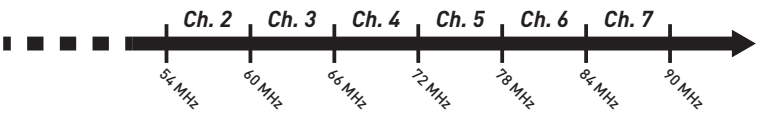


modulating

Modulators are the heart of the system. They take analog video/audio signal and convert it into a format usable by TVs. Analog TV signal is modulated in two ways[1]:

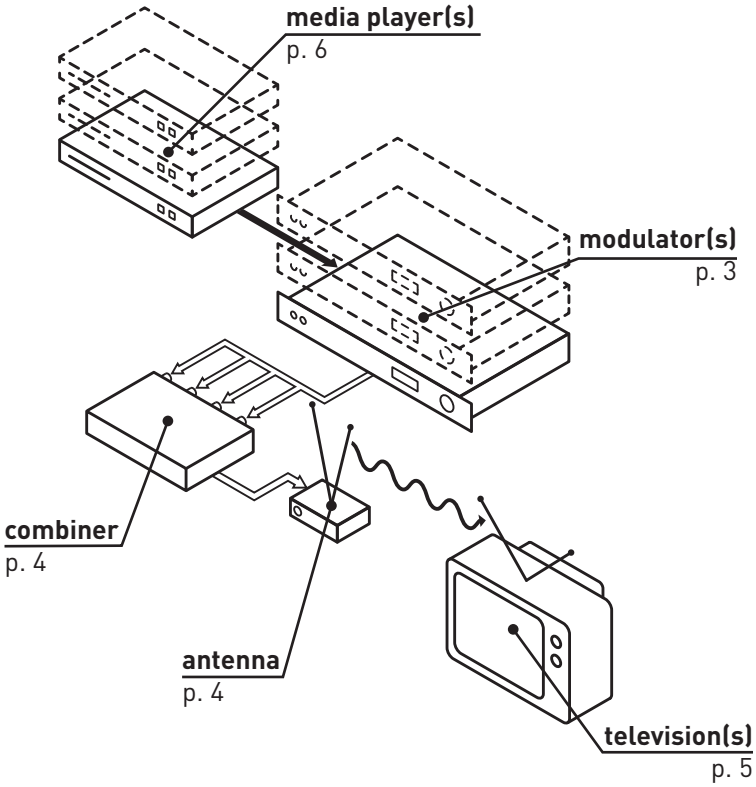


Each TV signal is combined with a carrier signal corresponding to a particular channel. Each channel occupies a 6 MHz range designated by the FCC:



what you'll need

Want to create your own short-range analog broadcast system? Here's everything you'll need - we'll also show you how to put it together.



modulator hardware

Depending on which modulator you're using (We used Blonder -Tongue[2] modulators), your modulator should have ports that look something like this:

RF OUT
The modulated signal, which goes to the combiner
(Coax cable)

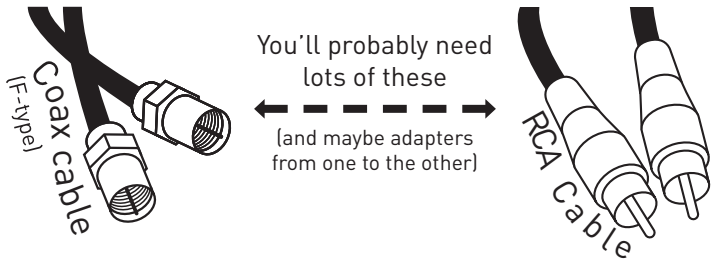
IF IN/OUT
Allows RF continuity
(Connect a coax cable between these ports)

AUDIO IN
(mono) Audio signal from your media player
(RCA cable)

VIDEO IN
Video signal from your media player
(Coax cable)

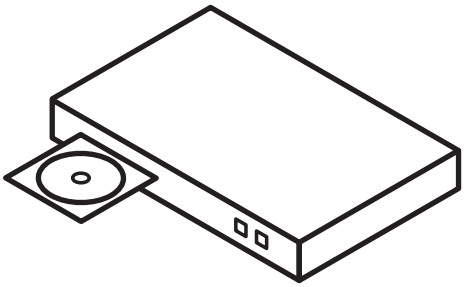
Your modulator should also have controls to select the broadcast channel.

cables



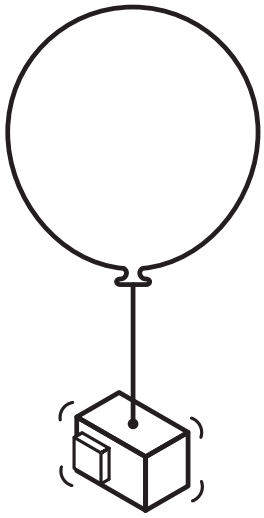
what to broadcast?

Basically any media device that outputs analog video can be broadcast over the air!

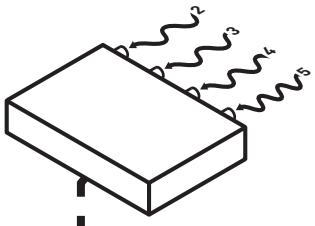


DVD players are a reliable option for video playback (especially if they already have built-in analog outputs)

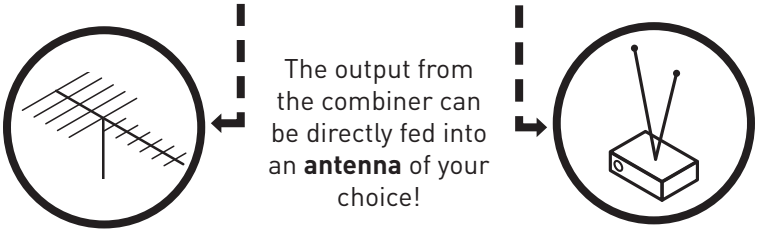
Livestream a **GoPro** feed to a laptop over Wi-fi, and use an RCA converter to broadcast it! (we've tried this one before[4])



combiners + antennas



If you want to broadcast on multiple channels, you'll need a **signal combiner,** which takes inputs from multiple modulators and layers them into a single analog signal.



The output from the combiner can be directly fed into an **antenna** of your choice!

~a note on antennas~

There are a ton of different antennas you can use. We recommend using passive antennas (i.e. antennas that don't need external power), as the signal is fairly short-range without amplification - and therefore (probably) not subject to FCC regulation*

*But actually, test your signal range and check the FCC regulations[3]