

Electronics Workshop - March 30, 2017

Time & Location:

7:00 PM

Fire District 6 Training Room, 2123 Jackson Highway, Chehalis, WA

Topics:

1. Signal/Function Generators
2. FM Deviation
3. Hands-On Oscilloscopes

Bring (if you have):

1. Oscilloscope
2. Audio Signal Generator or Function Generator

Notes:

Periodic waveform: Frequency = 1/Period; 1 millisecond = 1,000 Hertz

FM modulation index = frequency deviation / modulation frequency
at modulation index of 2.41, carrier magnitude is 0

FM deviation ratio = max frequency deviation / max modulation frequency

Reference:

Arduino Signal Generator:

1. An interesting review of several approaches to Arduino Digital to Analog Conversion:
<http://embeddednewbie.blogspot.com/2011/02/review-of-arduino-dac-solutions.html>
2. An Arduino wiki with a large collection of information: <https://arduino-info.wikispaces.com/>
3. A good study of ways to increase the maximum frequency of an Arduino function generator:
<http://tronixstuff.com/2011/10/22/tutorial-arduino-port-manipulation/>

PC Signal Generator:

1. This site has a free version which is what I used: <http://www.dr-jordan-design.de/signalgen.htm>

FM Deviation:

1. YouTube "How to Measure FM Deviation without special equipment using Carrier/Bessel Null":
<https://www.youtube.com/watch?v=8IBOYoIV5m8&t=2s>
2. YouTube "How to measure FM frequency deviation with a spectrum analyzer":
https://www.youtube.com/watch?v=Nw3_w1HrIEs&t=2s
3. The importance of deviation for packet, and how to tap the discriminator output of a scanner:
<http://www.febo.com/packet/layer-one/transmit.html>
4. Finding the discriminator output for a number of scanners:
<http://www.repeater-builder.com/uniden/mr8100/discrim.txt>