

Crystal Sets to Sideband

Dear friends, I have read the book with great interest. The book really captivates and I cannot tear myself away the book. The book contains 16 very interesting chapters, and every chapter says us a separately story about radio. I can strongly recommend to you have read this book. Below you can see the Contents of the book and path to load this one.

73! I.G.

CRYSTAL SETS TO SIDEBAND

A Guide to Building an Amateur Radio Station

By Frank W. Harris, KØIYE

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Chapter 1

THE FASCINATION OF RADIO

- Exploring the shortwave bands
- Growing up in the Morse code era
- The joy of building it yourself
- A brief history of radio communication
- Henry, Maxwell, Hertz, Tesla and Marconi.
- Fessenden, Edison, Flemming, DeForest and Armstrong
- The sinking of the RMS Republic and the birth of ham radio
- Ham radio in the last 80 years
- Becoming a radio amateur

Chapter 2

HOMEBUILDING AMATEUR RADIO EQUIPMENT

- What qualifies as homebuilding?
- When homebrewing is not appropriate
- Barriers to modern homebuilding –
- Time, frequency stability and lead inductance
- Basic electrical knowledge
- Magnets & static electricity
- Voltage, current, resistance, energy and power (Illustrated with drawings of water & mechanical analogies)
- Conductors, Insulators and semiconductors
- Capacitors, inductors, transformers & alternators
- Home power distribution, transformers at low and high frequencies

Chapter 3

SETTING UP AN ELECTRONICS WORKSHOP

- R&D as recreation
- How to build radios (or anything else) in your basement
- Persistence, read books, keep a notebook, & work in small increments
- Minimum tools needed
- The ARRL Amateur Radio Handbook
- Soldering irons and small tools
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- Wood carving gouges for making PC boards
- >50 MHz Oscilloscope
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- Quality multimeter
- Lab power supply
- Calculator
- Lab notebook
- Collection of electronic junk
- Parts catalogs
- Capacitance meter
- Test leads & socket boards
- Nice-to-have tools
- RF & audio generators, spice software & spectrum analyzer

Chapter 4

HERTZIAN WAVES IN THE BASEMENT

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- Mechanical and LC electrical oscillators
- Antenna and transmission line theory

- Crystal set components
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GETTING ON THE AIR - DECIDING WHAT TO DO FIRST

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- How an amplifier becomes an oscillator
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- Quartz crystals – the key to frequency stability
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- How to wind them (and mistakes you might make)
- The final amplifier stages for the QRP
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- Bifilar wound, broadband transformers
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Chapter 13

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Chapter 14

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- High voltage power supply safety
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- RF sinewave oscillator
- Quartz crystals
- Triode and pentode oscillators
- Old-tech voltage regulation – big, crude, expensive, but beautiful
- The travails of triode tubes
- The oscillator and buffer
- The final amplifier – triodes chirp
- The transmitter power supply
- An inadequate supply from a 1935 radio
- A good power supply made from cheap, modern, boring parts
- How to check out junk power transformers
- A complex but adequate supply made from ancient parts
- It works! No one suspects it's old and it's a success on today's 40 meter band
- An old-tech receiver
- A super regenerative receiver made from ancient tubes
- The power supply
- Super-regen on the modern hambands
- Lots of fun, but not up to modern QRM & QRPs - back to the drawing board!

Chapter 15

THE NOBEL PRIZE FOR SIDEBAND

- It can't be that hard! Want to bet?
- The sideband generator – how it works
- The 9 MHz oscillator / amplifier
- The audio amplifier
- The balanced modulator
- Building your own crystal ladder filter
- Decoupling the power supply leads
- Getting rid of RF feedback - RF filtering for all inputs
- Tuning and testing
- Using the generator for AM modulation and CW
- Moving the 9 MHz SSB signal to a hamband
- Move the SSB only once!
- No wonder most ham rigs are transceivers
- Moving the 9 MHz signal to the difficult HF hambands
- Move the VFO first, then mix it with the SSB 9 MHz.
- Pick your oscillator and VFO frequencies carefully
- Hearing your own VFO in the receiver
- The hardest band – 17 meters
- Covering the widest band – 10 meters
- A linear sideband QRP, VFO-tuned module
- All stages must be linear and low distortion
- All gain stages should be broadband to prevent oscillation
- Sometimes high pass filter output is needed & not the usual low pass
- Checking out the generator
- Driving a 50 watt linear amplifier

Chapter 16

ANCIENT MODULATION

- Defining amplitude modulation
- Modulating vacuum tube final amplifiers
- Plate, screen & cathode modulation
- A "collector modulator"
- Converting a MOSFET keyer into a modulator
- Generating AM with an SSB balanced modulator
- Compensating for non-linearity
- Compression by accident
- You probably don't need to build a compressor

In conclusion:

*Homebrew ham radio is never complete - when it works perfectly and does all the latest stuff, the hobby is over. Not likely. Long live homebuilding!
Thanks for reading my book.*

73's Frank W. Harris, KØIYE