

Intro to Amateur Radio Microwave

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Why Amateur Microwave?

- Experimentation, homebrewing
- New bands
- Extra points in VHF/UHF contests
- Experimentation with new digital modes
- Spectrum needs to be used or it will be given away

History

- First ham radio experimental activity around 1946, using technology developed during WW2
- First QSO's on 10 GHz were about 2 miles, using klystrons and wideband FM
- Later developments included Gunn diodes, multipliers, TWT's, and solid state amplifiers
- As technology improved, more narrowband operation became possible and distances increased. Also, operation at higher frequencies became possible.

Microwave Frequencies Available to Hams

- 1240 – 1300 MHz (60 MHz)
- 2300 – 2310 MHz and 2390 – 2450 MHz (70 MHz)
- 3300 – 3500 MHz (200 MHz)
- 5650 – 5925 MHz (275 MHz)
- 10000 – 10500 MHz (500 MHz)
- 24000 – 24250 MHz (250 MHz)
- 47.0 – 47.2 GHz (200 MHz)
- 75.5-81.0* GHz (excludes 76 – 77 GHz) (4.5 GHz)
- 119.98-120.02 GHz (40 MHz!)
- 142.0-149.0 GHz (5 GHz)
- 241.0-250.0 GHz (9 GHz)
- All above 300 GHz

Operating Modes

- CW, FM, SSB
- Digital modes (spread spectrum, OFDM, JT-65, etc.)
- Laser beams

Typical Activities

- Microwave contests
- EME (moonbounce)
- Data transmission
- Terrestrial weak signal
- Satellites
- Many more

How to get started

- Web links
 - <http://www.wa1mba.org/>
 - <http://www.g3pho.free-online.co.uk/microwaves/index.htm>
 - Google
- Local microwave clubs and groups
 - www.50mhzandup.org
 - <http://www.ham-radio.com/sbms/>

Equipment

- Typical setups
 - Simple Gunnplexers
 - Narrowband transverters
 - Antennas: dishes, horns, beam antennas, lens antennas
- Buy or build?
- How much??

Where to Get Parts & Kits

- Swap meets and hamfests
- Surplus stores
- DownEast Microwave Company
- SHF Microwave parts company
<http://www.shfmicro.com/>
- DB6NT <http://www.kuhne-electronic.de/>

Where to find activity

- SBMS - 2 GHz and up contest Apr 30 to May 1
- 10 GHz and up contest Aug and Sept.
 - Listen on 440.300 or 440.325 MHz repeaters
- Sprint contests
- October EME contest

W6BY Aug. 2004 10 GHz and up Contest



AD6A Station



Gary, AD6FP Rover Station



Steve KB8VAO



W6QI “Spaceball” Antenna



N9JIM's Home Station



Sometimes, things don't go as planned...

One of the hazards of rover operation is Mother Nature. Here is the result when the wind blew my dish over...



Rig Testing at Canada college



Uh oh, we attracted some UFO's!



Randy NR6CA on Mt. St. Helena



50 MHz and Up Group

(an unabashed self-promotion)



- Normally meets first Tuesday of each month at 7 PM at National Semiconductor meeting room
- See web page for meeting place and agenda
- www.50mhzandup.org

