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PSK31
- keywords -

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PSK31 - Usage and History

- Amateur Radio transmission mode
- Modern Replacement for
  Radio Teletype (RTTY) with Baudot or ASCII code
- Broadcast-Type transmission
- no Layer 2 (and up) protocols!

Technical Facts of (B)PSK31 (1)

first - and mostly used - variant:

- DBPSK modulation
- Baudrate: 31.25 Bd
  (why?: 8000 Hz used as sampling frequency and
  8000 Hz / 256 = 31.25 Hz)
- Transmission filter: raised cosine impulse
- No channel code (=> no delay!)
- Modem: soundcard (+ isulation) and special software
- Transmission using “off-the-shelf” shortwave transceivers in SSB-Mode

Technical Facts of (B)PSK31 (2)

- "Varicode" - a static Huffman-like code with start and stop bit
  -
  - `A  1111101`
  - `B  11101011`
  - `C  10101101`
  -
  - `e  11`
  -
  - `s  10111`
  - `t  101`
  -
- Character separation: two zeros
  e.g. 00 101 00 11 00 10111 00 101 00 i.e. "test"

Where to find Signals

- IARU recommended frequencies (International Amateur Radio Union)
  - 160m - 1838.150 kHz
  - 80m - 3580.150 kHz
  - 40m - 7035.15 for region 1 and region 3
  - 30m - 10142.150 kHz
  - 20m - 14070.150 kHz
  - 17m - 18100.150 kHz
  - 15m - 21080.150 kHz (although most activity can be found 10 kHz lower)
  - 12m - 24920.150 kHz
  - 10m - 28120.150 kHz
- Operate receiver in USB mode! (normally LSB below 10MHz)

Variants and Improvements

- since 1997: QPSK31 mode (rarely used)
  - differential QPSK modulation (3dB SNR loss compared to BPSK)
  - additional convolutional code (Rc=1/2, Cl=5, $(27,38)_8$)
  - 20 bit Viterbi decoding delay (0.64 sec) (interleaver missing)
- PSK63 mode (rarely used)
  - actually 62.5 Bd; twice the speed and bandwidth as (B)PSK31
  - no channel coding
- ... many other experimental variants