# Broadband over Power Lines

- Distribution of internet access by injecting broadband signals on medium- and low-voltage power distribution lines
- Uses signals generally below 80 MHz, and typically below 50 MHz
- Touted as an excellent distribution medium in rural areas (i.e., potentially near RA sites which are all in the vicinity of power lines)
- Concern is radiated emissions from power lines at fundamental, harmonic, and other frequencies

# BPL Proceeding

- NPRM on modification of Part 15 rules to accommodate BPL
- FCC 04-37
- Released 2/23
- Comments due 45 days after publication in FR; replies due 75 days after publication
- NSF is commenting through IRAC

# BPL Interference

- Several countries have entertained the BPL concept
- Virtually all have determined through studies or test deployments that BPL *does* cause significant and harmful interference to HF and VHF communications
- Japanese results showed interference to Radio Astronomy at frequencies beyond 300 MHz due to unwanted emissions

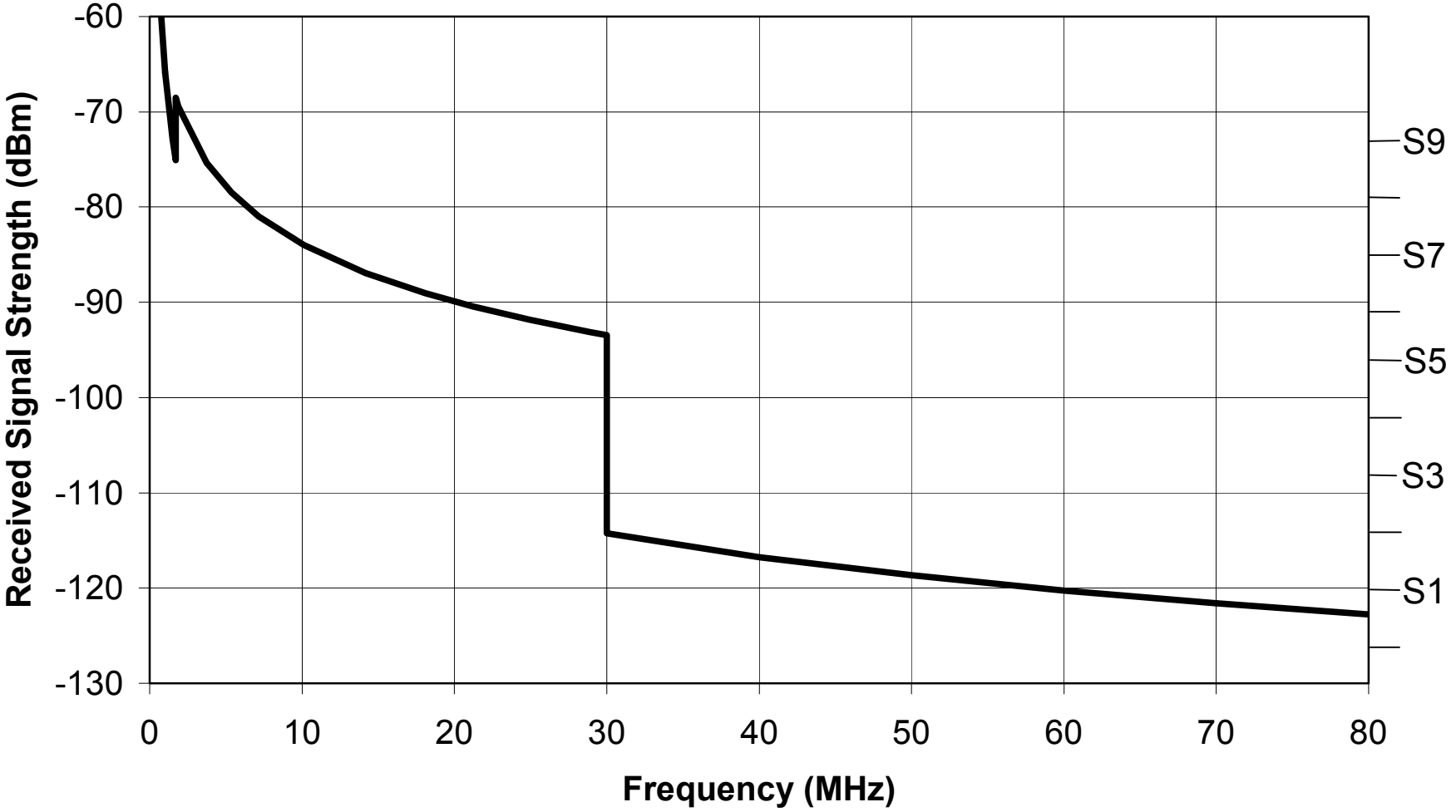
# Interference Studies

- Amateur radio operators have demonstrated overwhelming interference to HF communications at distances up to 1 km from power lines
- NTIA interference study due out soon (draft form; results are not inconsistent with amateur radio experience)

# Likely FCC Action

- Despite concerns, Commission is likely to approve BPL
  - Proposal is Part 15 intentional radiator limits below 30 MHz; unintentional radiator limits above 30 MHz
- Emphasis is Part 15—non-interference basis
  - But once the cat is "out of the bag," it's too late
  - Commission pushing adaptive interference techniques (notching OFDM carriers; registration of BPL injection and repeater sites, minimize power, etc.)

**Maximum Power Received from a Single BPL Device**
**Into an Isototropic Receive Antenna at a Distance of 100 m**



# BPL – RA Considerations

- BPL is a potential interference source to low-frequency RA
- Frequencies at and below 74 MHz are particular concerns
- Measurements show possibility for significant interference from digital hash at frequencies beyond 300 MHz
- RA observatories should carefully monitor BPL plans and activities of local electric utility providers