FLETCHER, HEALD & HILDRETH, PLC

Telecommunications Law & Regulation

FCC DEVELOPMENTS

MAY 2008 – MAY 2009

CORF MEETING
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I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS

In a May 2004 NPRM, the FCC proposed to allow limited use of unlicensed devices where TV channels are not being "used" ("White Spaces")

-Device would test for use by GPS location or sensing signals.

-CORF filed comments supporting prohibition of unlicensed use of 608-614 MHz

-In October 2006, the FCC took first tentative steps, issuing Order and Further Notice of Proposed Rulemaking:

2006 Order:

-generally permitted *fixed, unlicensed* operations after 2/17/2009 on vacant" TV channels

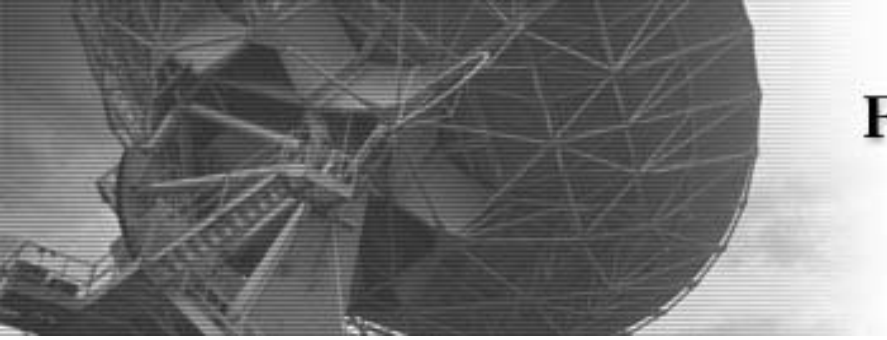
-prohibits unlicensed use on Channel 37 and on Channels 52-69

-prohibits mobile devices on Channels 14-20 in all areas.

I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS (CONT'D)

***12/2008* -- FCC issues Order on operational rules:**

- The new rules provide for both fixed and personal/portable devices to operate in the TV white spaces on an unlicensed basis.
- All devices, *except* personal/portable devices operating in "*client*" mode (subject to control of another device), must include:
  - geolocation capability
  - ability to access Internet database of protected radio services + the locations and channels that may be used by the unlicensed devices at each location.
- The unlicensed devices must first access the database to obtain a list of the permitted channels before operating.
- The database will be established and administered by a third party or parties.



I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS (CONT'D)

- Fixed devices may operate on any channel between 2 and 51, *except* channels 3, 4 and 37, and subject to a number of other conditions. Fixed devices may operate at up to 4 Watts EIRP

- Portable devices may operate on any unoccupied channel between 21 and 51, *except* channel 37. Portable devices may operate at up to 100 mW EIRP *except* that operation on channels adjacent to protected channels will be limited to 40 milliwatts.

I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS (CONT'D)

- Add'l requirements to further mitigate potential interference and help remedy potential interference should it occur:
  - all fixed devices must register their locations in the database and transmit identifying and contact information.
  - portable devices operating independently must provide identifying information to the TV bands database.
  - all devices must include adaptable power control so that they use the minimum power necessary to accomplish communications.
- All white space devices are subject to equipment certification by the FCC Laboratory.

I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS (CONT'D)

PROTECTION OF RADIO ASTRONOMY

Channel Prohibitions:

- FCC prohibited use of channel **37**

- FCC prohibited use of channels **3** and **4**, primarily to protect cable TV set top boxes.

Geographic Prohibitions:

FCC prohibited operation of devices within 2.4 km of the following RAS observatories:

ATA
Arecibo (which including the islands of Puerto Rico, Desecheo, Mona, Vieques and Culebra)
GBT
VLA
VLBA stations
NRRO and Table Mountain are also protected.

The 2.4 km radius appears to be a misreading of a letter from NTIA to the FCC.

I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS (CONT'D)

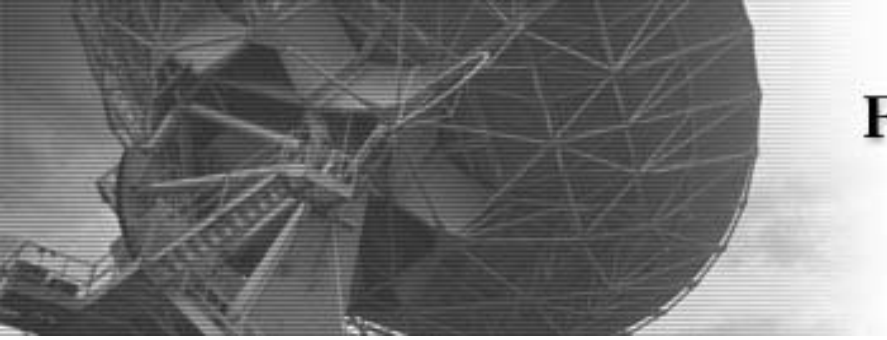
Out-of-band Emission limits:

The FCC enacted the following out-of-band emission limits (Section 15.709(c)), generally and with specific application to channels 36 and 38:

(1) In the 6 MHz channels adjacent to the operating channel, emissions from devices must be at least 55 dB below the highest average power in the band.

(2) Measurements must be performed using a minimum resolution bandwidth of 100 kHz with an average detector. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 100 kHz.

(3) At frequencies beyond 6 MHz from the edge of the operating channel, radiated emissions from devices must meet the requirements of Section 15.209 [the general rule for unlicensed devices].



I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS (CONT'D)

(4) Emissions in the band 602 – 620 MHz must also comply with the following fieldstrength limits at a distance of one meter:

Frequency (MHz	Field Strength dBμV/meter/120
602 - 607	120 – 5[F(MHz) – 620]
607 - 608	95
608 - 614	30
614 - 615	95
615 - 620	120 – 5[620 – F(MHz)]

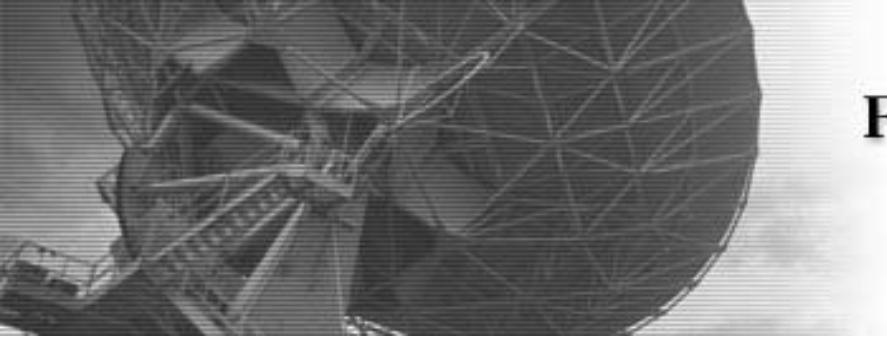
I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS (CONT'D)

Channels "Reserved" for Wireless Microphones:

In certain metropolitan areas, 2 channels will be "reserved" for wireless microphones, and white space devices will be prohibited from using those channels.

Reserved channels in each market -- the first channels open on either side of channel 37.

E.g., if channels 36 and 39 were used by local TV stations, the reserve channels would be channels 35 and 38.



I. UNLICENSED OPERATIONS IN THE TELEVISION BANDS (CONT'D)

CURRENT STATUS:

- Petitions for Recon filed at the FCC

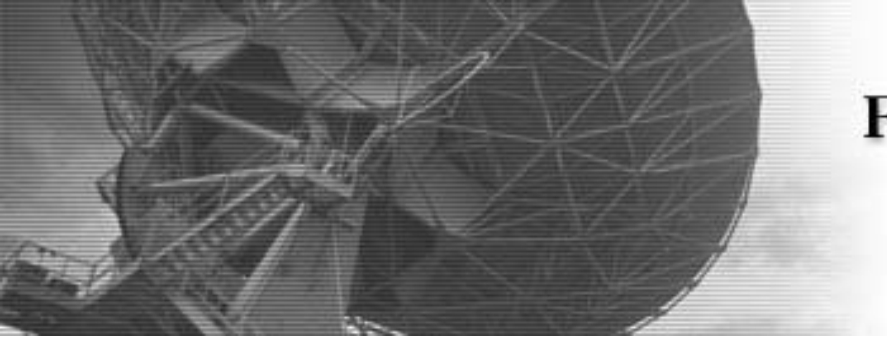
  Primarily seek:

  elimination of protection for wireless mics

  increase in power

  elimination of protection of TV Channels 14-20

- Also, federal court appeal filed

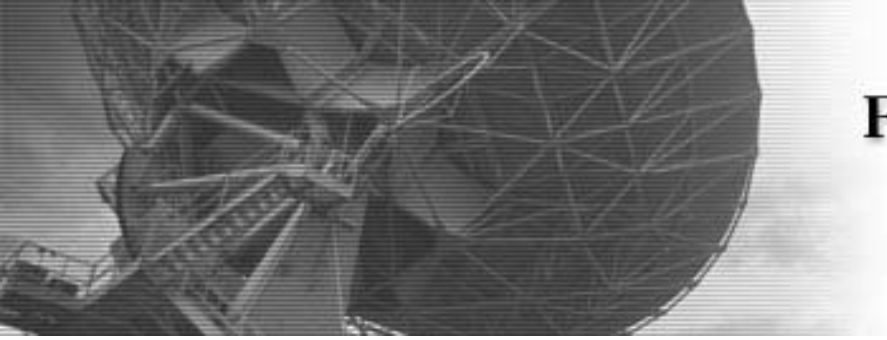


II. BROADBAND OVER POWERLINE

In October of 2006, an FCC Order modified certain Broadband-Over-Powerline ("BPL") technical rules. Among other things, the FCC:

- prohibited BPL operation on *73.0-74.6 MHz* within 65 *km* of the VLA

- BPL operators must consult with RAS prior to operation within 4 km of the VLBA sites, on frequencies from *1.7-80 MHz*.



II. BROADBAND OVER POWERLINE (CONT'D)

Subsequent appeal of BPL rules to the D.C. Circuit by the Amateur Radio Relay League (ARRL):

Court sent parts of BPL rules back to the FCC, and required the FCC to make certain staff data available for public review and comment, and to review and re-justify certain technical criteria or change elements of the rules.

- Challenged rules remain in effect in the meantime.

- On remand, the FCC must either re-justify or change the extrapolation factor.

-The next step in the process will be a request for new comments by the FCC.
No date set yet.

- Recently release of unredacted FCC documents suggests that:

FCC may not have fully addressed evidence that BPL does not act like a point source,

which would skew BPL OOB protection rules.

III. KU-BAND DEVELOPMENTS

A. Background -- VME Rulemaking

- In May of 2007, FCC released NPRM on Ku-band Vehicle Mounted Earth Stations ("VMEs"):

- Uplinks: 14.0-14.5 GHz
- Downlinks: 10.95-11.2 GHz
  11.7-12.2 GHz
  11.45-11.7 GHz

- This is similar to previous FCC action on Earth Stations on Maritime Vessels("ESVs")

- FCC noted use of the 14.47-14.50 GHz band by RAS, and sought comments on the feasibility of post-licensing coordination between VME and RAS operations.

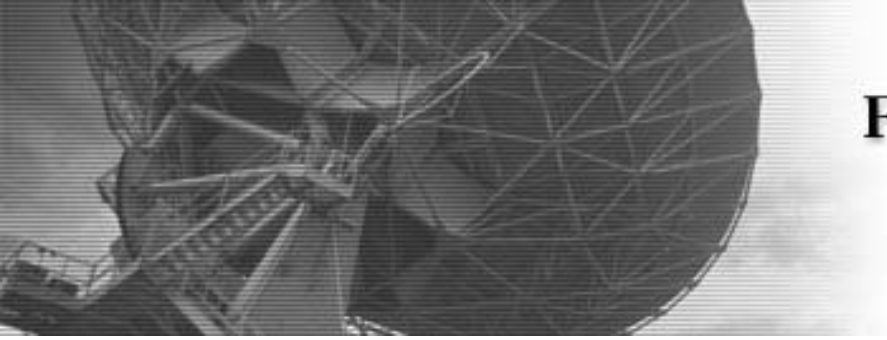
III. KU-BAND DEVELOPMENTS (CONT'D)

- CORF filed comments:

  - proposed ban on VME use of 14.47-14.50 GHz, noting difficulty of controlling location of VMEs, even with GPS.

  - alternative: coordination prior to licensing, especially if controls not embedded into terminals, use of coordination zones around observatories.

- No FCC action yet on Rulemaking.

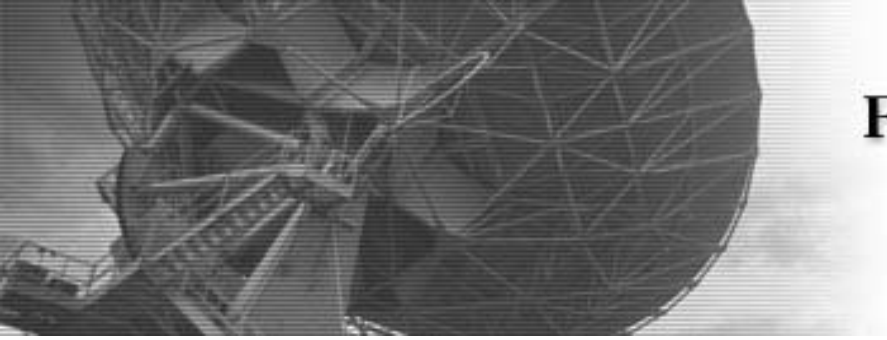


III. KU-BAND DEVELOPMENTS (CONT'D)

B. March 2009 License to L-3 Communications:

L-3 sought and received license to operate Ku-band Mobile Earth Station

- military use
- Since no VME rules, licensed as Land Mobile Sat Service
- authorized on only secondary basis for both uplinks and downlinks.
- uplink required to protect RAS secondary use at 14.47-14.5 GHz
- must enter into agreement with NSF and file copy w FCC
- Data logging requirement:
  - record location, frequency, bandwidth
  - file contact information at FCC, keep data 1 year, make available in 24 hours.
- L-3 intends to file for operation of multiple mobile earth stations



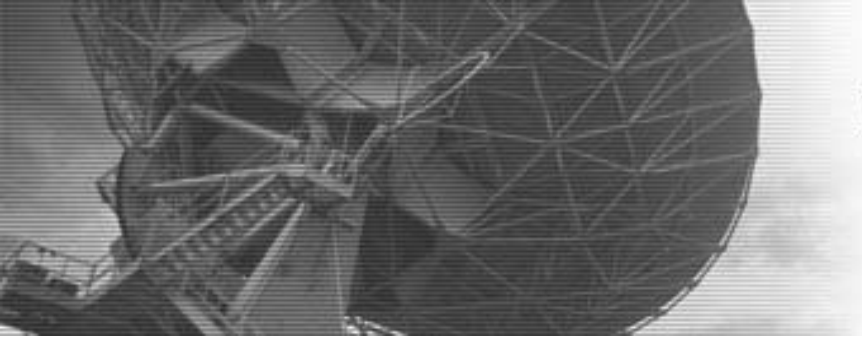
IV. 4.9 GHZ FIXED MICROWAVE LINKS

-In May of 2007, FCC issued an NPRM which responded to petition to "clarify" the rules to state that licensees in the 4940-4990 MHz band have authority to operate point-to-point and point-to-multipoint permanent fixed links on a primary basis.

- Previously, FCC authorized use of 4.9 GHz for mobile services, and authorized fixed use on a secondary and temporary basis.

- CORF filed comments noting that the FCC's rules explicitly prohibit permanent fixed point-to- point stations in this band.

- Nevertheless, in light of public safety use, CORF suggested that if permanent fixed operations in the 4.9 GHz band are authorized, operations w/in geo areas in Footnote US311 should go through prior coordination.



IV. 4.9 GHZ FIXED MICROWAVE LINKS (CONT'D)

- April 2009 FCC Order authorized permanent fixed links for public safety.

  FCC dismissed interference concerns:

  - power and antenna gain parameters authorized are no more than the "already low" parameters in rules for other fixed microwave.

  - Footnote US311 allows RAS only on unprotected basis. FCC asserts that prior coordination would raise RAS to primary status.

- FCC acknowledges that rules and US311 require licensees "make every practical effort to protect radio astronomy operations …"

  - unclear whether any substance to that requirement, though worth citing if necessary.

  - Possible that more RAS leverage if the band were being used for non-public safety purposes, as a result of a public/private partnership that built the facility.

V. MODIFICATION OF GLOBALSTAR/IRIDIUM L-BAND LICENSES

November of 2007 -- FCC modified the 1610-1626.5 MHz band to provide "an equitable distribution" of the spectrum between Globalstar (CDMA) and Iridium (TDMA):

3.1 megahertz of shared spectrum assigned to the exclusive use of Iridium

Result:

1610.0-1617.775 MHz -- Globalstar exclusive

1617.775-1618.725 MHz -- shared between the two operators.

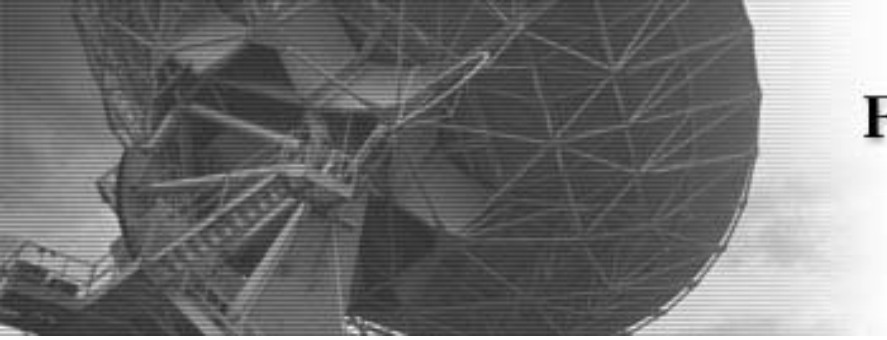
1618.725-1626.5 MHz -- Iridium exclusive

V. MODIFICATION OF GLOBALSTAR/IRIDIUM L-BAND LICENSES) (CONT'D)

This re-distribution went into effect per October 2008 FCC Order.

FCC also clarified that the revised allotment is not limited to U.S. operations, but rather, applies to operations in the rest of the world as well. Globalstar is not happy about this.

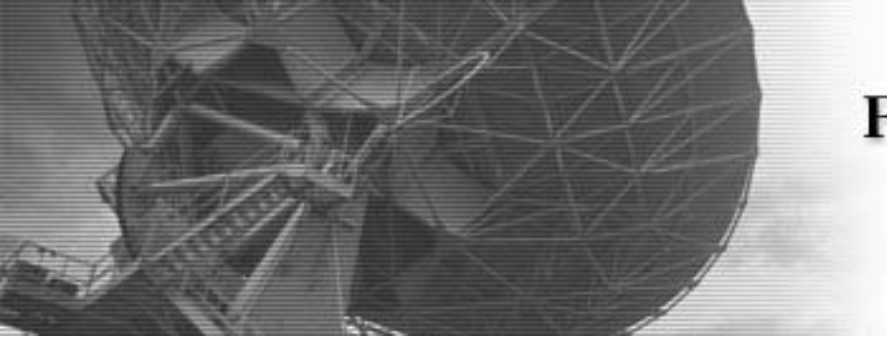
Globalstar court appeal of 2007 Order recently rejected.



VI. MEDRADIO SERVICE 401 – 406 MHZ

As supplement to existing Medical Implants Communications Service at 402-405 MHz, on March 19, 2009, FCC added "wing bands" at 401-02 and 405-06 MHz, and created new *Medical Device Radio Communications Service* from 401-406 MHz.

- This is a secondary service.
- allocation and service rules designed to be consistent with European (ETSI) standards
- For medical implant and body-worn devices (w/in a few centimeters of body)
  - implants throughout entire allocation
  - body-worn in "wing bands" only



VI. MEDRADIO SERVICE 401 – 406 MHZ (CONT'D)

Transmitter power:

-25 microwatts for LBT-enabled devices at 401-406

- 100 nanowatts for non-LBT enabled at 402-405

- 250 nanowatts for non-LBT enabled at 401-402 and 405-406

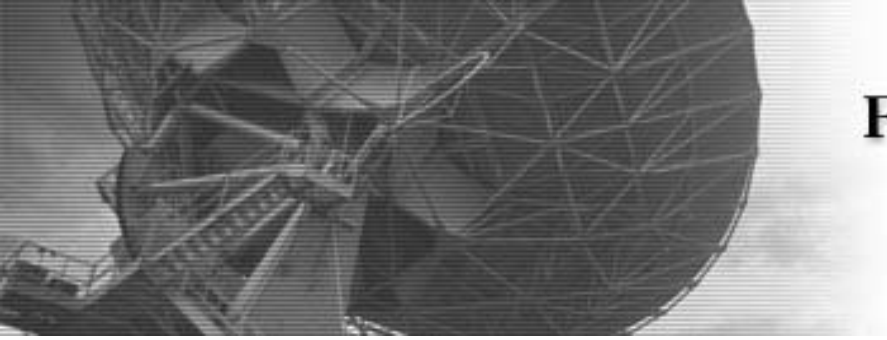
Unwanted Emission Limits: essentially the same as for existing service

Similar proposal pending for: 413-19, 426-32, 438-44, 451-457, 2360-2400 MHz.

VII. SPECTRUM INVENTORY

"Spectrum Inventory" Bill recently introduced in Senate -- S.649

- Introduced 3/2009 by Sens. Kerry and Snowe
- Requires FCC and NTIA to work together to inventory and produce report on:
  - users of band from 300 MHz to 3.5 GHz, private and govt.
  - licensed and unlicensed intentional radiators
  - location of stations and coverage/signal strength maps
  - put on public website and revise in real time
  - exemption available for inclusion in website and public report where it would harm "national security"
  - No apparent reference to passive users

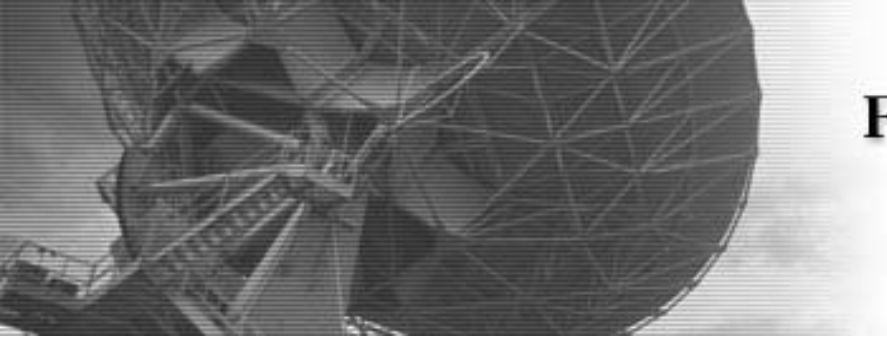


VII. SPECTRUM INVENTORY (CONT'D)

BACKSTORY:

- Seen as "1st Step towards comprehensive spectrum reform"
  - i.e., more spectrum for commercial wireless broadband
  - read: auctions, white spaces, federal/private sharing of spectrum
    - Govt got $20 billion from recent 700 MHz auction
    - new admin very big on wireless tech

- potential conflict between FCC/NTIA which wants this, and DOD (large target)
  - DOD could be a big roadblock, even with national security exemption



VII. SPECTRUM INVENTORY (CONT'D)

-Inventory might happen regardless of legislation:

- Political and regulatory momentum is towards more auctions, white spaces, and even govt. agencies paying for spectrum use.

-calls for inventory already being made by and to

Commerce/NTIA and FCC

- Passive users of spectrum may be very vulnerable

Time to act is now:

informing decision makers of needs of passive users before decisions are made.

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QUESTIONS?

THANKS!

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