

CORF Presentation

Activities That May Impact RAS, EESS, and SRS

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Overview

- Recently finalized proceedings
- Current proceedings
- The FCC's preparation for WRC-07
- How can CORF help?
- Wrap-up

Recently Finalized Proceedings

- WRC-03 Omnibus Report and Order
- ESV Report and Order
- Broadband over Power Lines (BPL)
- Advanced Wireless Services (AWS)

WRC-03 Omnibus Report and Order

ET Docket No. 04-139, FCC 05-70
FCC Contact: Tom Mooring 418-2450

- WRC-03: June/July 2003
- R&O adopted March 10, 2005
- Major Changes:
 - ✓ Downgrades the Little LEO uplink and downlink feeder allocations to secondary status.
 - ✓ Allocates spectrum for RNSS uplinks and downlinks at 5 GHz and adopts pfd limits to protect RAS at 4.9 GHz (fn 5.443B)

WRC-03 Omnibus Report and Order

(continued)

A1

- Space Research Service (SRS)
 - Clarifies that Federal SRS (deep space) (Earth-to-space) allocation in band 7145-7190 MHz has primary status
 - Prohibits emissions to deep space in band 7190-7235 MHz
 - Upgrades secondary Federal SRS allocation at 14.8-15.35 GHz to primary status, except SRS (passive) at 15.2-15.35 GHz remains secondary
 - Allocates 25.5-27 GHz for Federal SRS downlinks on a primary basis

A1 Can we break this into two slides, for instance, one for SRS and another for EESS?
Alan.Scime, 4/26/2005

WRC-03 Omnibus Report and Order

(continued)

- Earth Exploration-Satellite Service (EESS)
 - Upgrades non-Federal EESS (space-to-Earth) allocation in band 25.5-27 GHz to primary status
 - Broadens EESS (space-to-space) allocation in band 25.25-27.5 GHz to secondary ISS allocation (use limited by 5.536)
 - Allocates 432-438 MHz to the Federal EESS (active) on a secondary basis for use mainly outside of the U.S.

ESV Report and Order

IB Docket No. 02-10, FCC 04-286

- Adopted December 15, 2004
- Creates licensing and service rules for ESVs operating in C-band and in Ku-band
 - ✓ ESVs may operate in the band 14-14.5 GHz as an application of the FSS
 - ✓ ESVs may be authorized to communicate with FSS space stations on a primary basis
- ESV operations in the band 14.47-14.5 GHz are subject to IRAC coordination near 3 observatories
 - ✓ Within 125 km of Mauna Kea, Hawaii
 - ✓ Within 90 km of Arecibo, Puerto Rico
 - ✓ Within 45 km of St. Croix, U.S. Virgin Islands

Broadband Over Power Line (BPL)

ET Docket No. 04-37, FCC 04-245

FCC Contact: Anh Wride, 418-0577

- Adopted October 14, 2004
 - No change in Part 15 emission limits
 - Must operate on a non-interference basis
 - Requires BPL systems to incorporate dynamic interference mitigation capabilities
 - Establishes a database of active BPL installations
- 13 petitions for reconsideration are pending

BPL Rules

- ◆ Access BPL cannot operate on certain “**excluded frequency bands**”
 - Specifically, the following 12 Aeronautical (R) frequencies (communications restricted to safety and regularity of flight):

2850-3025 kHz	3400-3500 kHz	4650-4700 kHz
5450-5680 kHz	6525-6685 kHz	8815-8965 kHz
10005-10100 kHz	11275-11400 kHz	13260-13360 kHz
17900-17970 kHz	21924-22000 kHz	74.8-75.2 MHz

BPL Rules

- ◆ Establish “**exclusion zones**” within which Access BPL must avoid operating on certain frequencies
 - Access BPL using *overhead* power lines must avoid using **73-74.6 MHz** within **29 km** of ten radio astronomy sites (Very Long Baseline Array facilities)
 - Access BPL using *underground* power lines or overhead *low voltage* power lines must avoid using **73-74.6 MHz** within **11 km** of these ten radio astronomy sites
 - Access BPL must avoid using **2182 kHz** (2173.5- 2190.5 kHz) within **1 km** of a U.S. Coast Guard or maritime public coast station

BPL Rules

- ◆ Establish “consultation requirements” for BPL with public safety, and certain sensitive federal and aeronautical stations
- ◆ Establish a “good faith” process to ensure that
 - Access BPL systems do not cause interference; and
 - Any restrictions by licensees on BPL are only those necessary to avoid interference

BPL Rules

■ Protects RAS observatories by requiring that BPL operators:

- Not operate in 73-74.6 MHz within either 29 or 11 km of 10 VLBA stations
 - ✓ Distance depends on the voltage level and whether power line is buried or overhead
 - ✓ On recon, NTIA has determined that only one of these facilities needs to be protected (BPL operators must not operate within 47/65 km of a single VLA station located at San Agustin, NM)
- Notify before operating within 4 km of the US311 facilities in the band 1.7-38.25 MHz

Advanced Wireless Services (AWS)

- The FCC has allocated the Government transfer band 1710-1755 MHz to fixed and mobile services on a primary basis for non-Federal use
- This spectrum has been designated for AWS use
 - Fixed and mobile stations are limited to a peak EIRP of 1 W and thus, this spectrum is likely to be used for mobile station transmit
 - Split between Block A (1710-1720/2110-2120 MHz) and Block B (1720-1730/2120-2130 MHz)
- Per footnote US311, RAS may operate in 1718.8-1722.2 MHz on an unprotected basis at 16 sites
- Auction of licenses in the band 1710-1755 MHz may begin as early as June 2006

Current Proceedings

- Ultra-wideband (UWB) Systems
- Cognitive Radio
- Aeronautical Mobile-Satellite Service (AMSS)
 - AMSS earth stations communicating with FSS networks in the Ku-band

Ultra-wideband (UWB) Systems

FCC Contact: John Reed 418-2455

- In the 2002 UWB Report and Order, the FCC authorized the following:
 - Communications in 3.1-10.6 GHz
 - Vehicle radars in 22-29 GHz
 - Imaging systems below 10.6 GHz
- UWB devices may not operate onboard an aircraft, a ship or a satellite
- Petitions for reconsideration have largely been addressed
 - Satellite Industry Association's concerns remain

Cognitive Radio

ET Docket No. 03-108, FCC 05-57

FCC Contact: Hugh Van Tuyl 418-7506

- R&O adopted March 10, 2005
 - Made changes to certain equipment certification requirements
 - Requires the use of security features that would prevent unauthorized modifications to the RF operating parameters
- CORF expressed specific concerns
 - Transmissions not be allowed in Part 15 restricted bands
 - Out-of-band emissions from transmissions in the band 24-24.25 GHz not interfere with RAS in the band 23.6-24 GHz.
- The Cognitive Radio R&O
 - Made no changes to the restricted bands
 - No changes to power limits

AMSS NPRM

IB Docket No. 05-20

Contact: Arthur Lechtman (202) 418-1465

- Boeing Connexion and ARINC are currently authorized to provide broadband services on airplanes
- NPRM deals with service rules & procedures to govern the use of AMSS earth stations (planes) in the Ku-bands allocated to the FSS
 - 11.7-12.2 GHz (downlinks) & 14-14.5 GHz (uplinks)
 - Comments due July 5; Replies due August 3, 2005
 - Proposes coordination in the band 14-14.5 GHz as a prerequisite for licensing
 - Seeks comment on updating the list of observatories and associated coordinates in US203

FCC Prep for WRC-07

- FCC established WRC-07 Advisory Committee
 - Committee is currently preparing recommendations for WRC-07
 - Based on Committee's recommendations, the FCC, NTIA, and industry advise the State Department on the appropriate actions
 - FCC's web site for WRC-07 preparation is <http://www.fcc.gov/ib/wrc-07>

Where is the action?

- There are three active groups:
 - Informal Working Group 1 (IWG-1)
 - Informal Working Group 2 (IWG-2)
 - U.S. Working Party 7D

IWG-1

Terrestrial and Space Science Services

- Chair: Jennifer Warren, Lockheed Martin Corporation, (703) 413-5970
- CORF should participate in Agenda Item 1.20:
 - Task is to consider the results of studies, and proposals for regulatory measures, if appropriate, regarding the protection of the Earth exploration-satellite service (passive) from unwanted emissions of active services in accordance with Resolution 738.
- Next Meeting is 2-4 pm on May 5, 2005 at Lockheed Martin Corporation, 1550 Crystal Drive, Suite 300, Arlington, VA.

IWG-2

Satellite Services and HAPS

- Chair: Steve Baruch, Leventhal Senter & Lerman PLLC, (202) 416-6782.
- CORF should participate in Agenda Item 1.21:
 - Task is to consider the results of studies, regarding the compatibility between the radio astronomy service and the active space services in accordance with Resolution 740, in order to review and update, if appropriate, the tables of threshold levels used for consultation that appear in the Annex to Resolution 739.
- Next meeting is not yet scheduled.

US Working Party 7D

- Chaired by Tom Gergely of NSF
(703) 292-4896
- RAS protection of likely interest to CORF:
 - RA.517: Protection from transmitters operating in adjacent bands
 - RA.611: Protection from spurious emission
 - RA.1031: Protection in bands shared with other services

How can CORF help?

- Review the registration process for radio observatories (codified at 47 CFR §2.107) in order to make it more useful
- Ensure that all RAS footnotes are up-to-date
 - Scrub current RAS footnotes and report needed changes
 - Build process to ensure continuing updates

Wrap-up

- Monitor FCC actions and offer solutions.
- File timely comments to ensure full public record is developed for your issues
- Participate in the WRC-07 preparation process
 - Domestic input does influence ITU decisions
- Consider making a public presentation at the FCC
 - Provide an overview of RAS
 - Explain spectrum issues and the impact FCC actions can have

Closing Details

- The FCC issued an Erratum to the WRC-03 Omnibus Report and Order
 - The Federal Register summary for the WRC-03 Omnibus R&O will incorporate the Erratum
- The FCC Online Table and the FCC Allocation History File are at www.fcc.gov/oet/spectrum/
 - The FCC Online Table has been updated to include:
 - WRC-03 Omnibus R&O
 - 3650-3700 MHz R&O
 - Narrowbanding R&O
- For questions about this presentation, contact Tom Mooring at (202) 418-2450; Tom.Mooring@fcc.gov