International Consortium for Telemetry Spectrum

ICTS REGION 2 REPORT

By the Region 2 (the Americas) Coordinator:

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2017 International Telemetry Conference
Las Vegas, NV, 26 Oct 2017

USA: Proposed Federal Spectrum Incentive Act of 2017 (H.R. 1888)

- The Department of Commerce is currently preparing recommendations on how to "incentivize" Federal agencies to relinquish or share electromagnetic spectrum to enable more commercial wireless broadband services to operate in Federal spectrum.
- The Federal Communications Commission (FCC), in collaboration with the National Telecommunications and Information Administration (NTIA), to conduct a bi-directional sharing study to determine best means of providing Federal entities flexible access to non-Federal spectrum. (NTIA has jurisdiction over all federal government communications, while the FCC has everything else, like commercial wireless.)

USA: Proposed Federal Spectrum Incentive Act of 2017 (H.R. 1888)

- Would create a spectrum incentive fund for payment of 1% of auction proceeds to federal agencies which cease operations on eligible frequencies without moving to other frequencies or move to another federal band. Calls for incentive payments in lieu of any payments from the Spectrum Relocation Fund for reimbursement of costs incurred in connect with relocation or sharing. But . . .
- There are concerns that the incentive payments would fall short of costs of relocation.

USA: More Proposed Legislation

- **MOBILE NOW Act** (S. 19): Requires at least 255 MHz of Federal and non-Federal spectrum to be made available below 6 GHz for wireless broadband:
  - 100 MHz unlicensed and . . .
  - 100 MHz licensed "*subject to potential continued use of such spectrum by incumbent Federal entities in designated geographic areas . . .*"
- However, relocation or discontinuance is **prioritized over sharing –** but with "*the need to preserve critical existing and planned Federal Government capabilities*"

USA: More Proposed Legislation

- The NTIA & FCC to report on feasibility of commercial wireless sharing frequencies in the 3 GHz band.
- The FCC, in collaboration with the NTIA, will conduct a bi-directional sharing study to determine the best means of providing Federal entities flexible access to non-Federal spectrum.
- The FCC to develop a national plan for making additional spectrum available for unlicensed operation provided such operations do not cause harmful interference to Federal or non-Federal users, or *"significantly impact homeland security or national security communications systems."*

National Spectrum Consortium (NSC)

- Resulted from latest AWS-3 spectrum auctions in the US
- ~ 200 Members - membership includes Major Defense firms, small businesses, academia, major commercial firms (e.g. AT&T, Nokia, Disney/ABC TV Group)
- $1.25B from the AWS-3 auction provided to the NSC to conduct R&D, prototyping & experimentation in support of Spectrum Access and Spectrum Sharing Projects in collaboration with academia and industry
- DOD's Spectrum Access Research & Development Program (SARD&P) leverages National Spectrum Consortium (NSC)

USA: WCS

- The **Code of Federal Regulations Title 47 CFR 27.73** requires Wireless Communications Services (WCS) licensees in the 2345-2360 MHz band to coordinate the deployment of base stations with AMT facilities in the adjacent 2360-2395 MHz band and to take all practicable steps necessary to minimize the risk of harmful interference to AMT facilities.
- Ranges need to be cognizant of a potential filter issue: some have not upgraded their filters to block 2345-2360 MHz:
  - Not an **Out-Of-Band Emissions** (OOBE) issue **--** it's an **Low Noise Amplifier** (LNA) saturation issue.

USA: WCS

- Older AMT receivers designed to receive entire band, 2310-2390 MHz, which was formerly allocated for AMT only.
- Particularly affects smaller 1-2 meter AMT dishes which have less room for larger filters.
- Johns Hopkins University Applied Physics Laboratory was tasked by the Aerospace Flight Test Radio Coordinating Council with preparing guidance for AMT operators to allow them to select effective filter/LNA combinations, maintaining link margin while protecting the AMT signal from high-powered WCS signals.

Brazil: WRCs-15 & -19 Concerns

- **L-Band**: At WRC-15 the band 1427-1518 MHz is identified for International Mobile Telecommunications (IMT), but Brazil has been operating AMT in the 1452-1472 MHz band since 2005. However, their Agência Nacional de Telecomunicações (Anatel) will identify a 20 MHz-wide Brazilian AMT band that shall remain inside the 1435-1525 MHz range. Still, chances are this AMT band will eventually be shifted from 1452-1472 MHz in order to accommodate the supplementary downlink of the IMT.
- **S-Band**: Until 2017 AMT is temporarily allocated in the 2230-2260 and 2330-2360 MHz bands. These are now the most heavily-used AMT bands in Brazil.

Brazil: AeroMACS Concerns 1

- Brazil is concerned about the status of the Aeronautical Mobile Airport Communications System (AeroMACS) implementation in ITU Region 2. AeroMACS is a new data link technology intended to support airport surface communications related to safety and regularity of flight **worldwide**, is based on IEEE802.16e (the WiMAX standard), and uses the 5091-5150 MHz AMT band.
- AeroMACS equipment can tune across the 5000-5150 MHz band in 250 kHz steps, which will allow AeroMACS to (hopefully) move away from any interference source such as microwave landing systems (MLS), AMT, or Military users operating in the 5000-5150 MHz band.

Brazil: AeroMACS Concerns 2

- Brazil is worried that if AeroMACS becomes ubiquitous, operating AMT in flight test aircraft within its range around commercial airports will face serious restrictions, if allowed at all.
- In the USA an experimental AeroMACS test-bed at the Detroit Metropolitan (DTW) Airport and is conducting to complete end-to-end trials with Cleveland's Hopkins (CLE) Airport. AFTRCC (and ICTS) Member Mr. Ken Keane is working with the AeroMACS industry, who seems to be making a conscientious effort (like reducing skyward emissions through appropriate placement and orientation of the AeroMACS antennas) to ensure they are 'good neighbors' with AMT, MLS and the Military.

Brazil: AeroMACS Concerns 3

- Recently, EMBRAER and Siemens-Brazil conducted AMT and AeroMACS compatibility tests at EMBRAER's flight test site located in the city of Gavião Peixoto, northwest of São Paulo state.
- Test results were presented by ICTS Member Mr. Luiz Fernando de Souza at the International Civil Aviation Organization (ICAO) meeting in Paris, France, on September 5th, 2017.
- These were the remarks after Mr. Souza's presentation (FSMP-WG/5 report under *Agenda Item 4 – 5 GHz Band Planning*):

  "The Information Paper provided details on some initial compatibility testing/simulation between aeronautical mobile telemetry (AMT) and AeroMACS. The paper concluded that for the example AMT systems considered, a 20 MHz guard band is required between the AMT and AeroMACS channels under worst-case conditions."

Brazil: AeroMACS Concerns 4

- (cont.)

  "The meeting appreciated the information but noted that an indication of the necessary desired-to-undesired signal ratio required for a given frequency offset would be very useful. The meeting also noted that AMT systems were not standardized, so results may differ for other AMT systems."

- EMBRAER will give a more detailed report at the ICTS Special Session at the 2017 International Telemetering Conference 2017, October 26th, in Las Vegas, State of Nevada USA.
- Results of this report will be presented at ICAO's Second Global Air Navigation Industry Symposium (GANIS/2) and First Safety and Air Navigation Implementation Symposium (SANIS/1) meetings in Montréal, Canada, by December 11th to 15th, 2017.

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