NSMA Working Group 3

2013 Conference Report

www.NSMA.org

Larrie Sutliff, Chair

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NSMA Working Group 3

2013 Conference Report

- Mission
- Participation
- Meetings
- Results
- Issues

Mission

- Develop specific coordination procedures
- Create recommendations for industry guidance
- Develop responsible spectrum use policy
- Interpret FCC rules
- Preparation of regulatory filings
- Interact with regulatory agencies
- Provide an industry forum for spectrum discussions

Participation

- NSMA is an open industry forum available to all who wish to participate and contribute to development of responsible spectrum use recommendations and policy.
- Working Group 3 is the place to start if you would like NSMA to consider a spectrum-related issue.
- Issues are handled as part of the WG3 agenda or spun off to a separate committee or working group.
- You are invited to come and bring your issues!

WG3 Participants

- Frequency coordinators
- Radio manufacturers
- Spectrum managers
- Service providers
- System Vendors
- Spectrum users
- Broadcasters
- Consultants
- Licensees

Meetings

- Meetings are by monthly teleconference.
- Agendas include background so new participants can come up to speed quickly.
- At most meetings we move forward on or track about 20 spectrum issues.
  - Standards
  - Regulatory
  - Technical
  - Industry spectrum use activity

Results

- NSMA industry recommendations
- FCC spectrum filings
- FCC visits
- Technical spectrum support to other industry groups
- Joint spectrum consensus with broadcasters
- Forum for exchange of information on spectrum issues
- Coordination among coordinators

Recommendations

- Adaptive Modulation recommendation
  - Ian Marshall, Editor
- BAS/FS Coordination recommendation
  - Dave Meyer and Kelly Williams, Editors
  - Committee meets monthly
  - Strong participation by broadcasters and coordinators
- NLOS Coordination recommendation
  - Tom Giuffrida, Editor
- ATPC recommendation revision planned

FCC activity

- Continuing activity in the FCC's broadband proceeding in WT docket 10-153
- Occasional activity on WSI filings
- Technical support to FWCC
  - Text contributions
  - FCC visits
  - Response to FCC questions
- Tracking regulatory issues

Issues

- 4 GHz band utilization
  - Incumbent earth station use
  - Possible short haul transport
  - Use of smaller antennas for short-range low-power applications
  - Low-power, spread spectrum opportunities- low power density, wide channels
  - Revise the FS band plan
    - Attractive for traditional point-to-point use
    - New band plan- current plan is interleaved

Issues

- Broadcast Auxiliary Service – Fixed Service sharing
  - FCC allocation in the 7 and 13 GHz bands
  - FS OK outside BAS op area
  - NSMA and SBE have launched the BAS-FS Coordination Committee under WG3 to develop an NSMA recommendation to address sharing.
  - Co-editors are Dave Meyer and Kelly Williams
  - Next BAS Coordination Committee meeting:

    1:30 PM ET, Tuesday, June 18th

    877-888-4443, #, 5379190#

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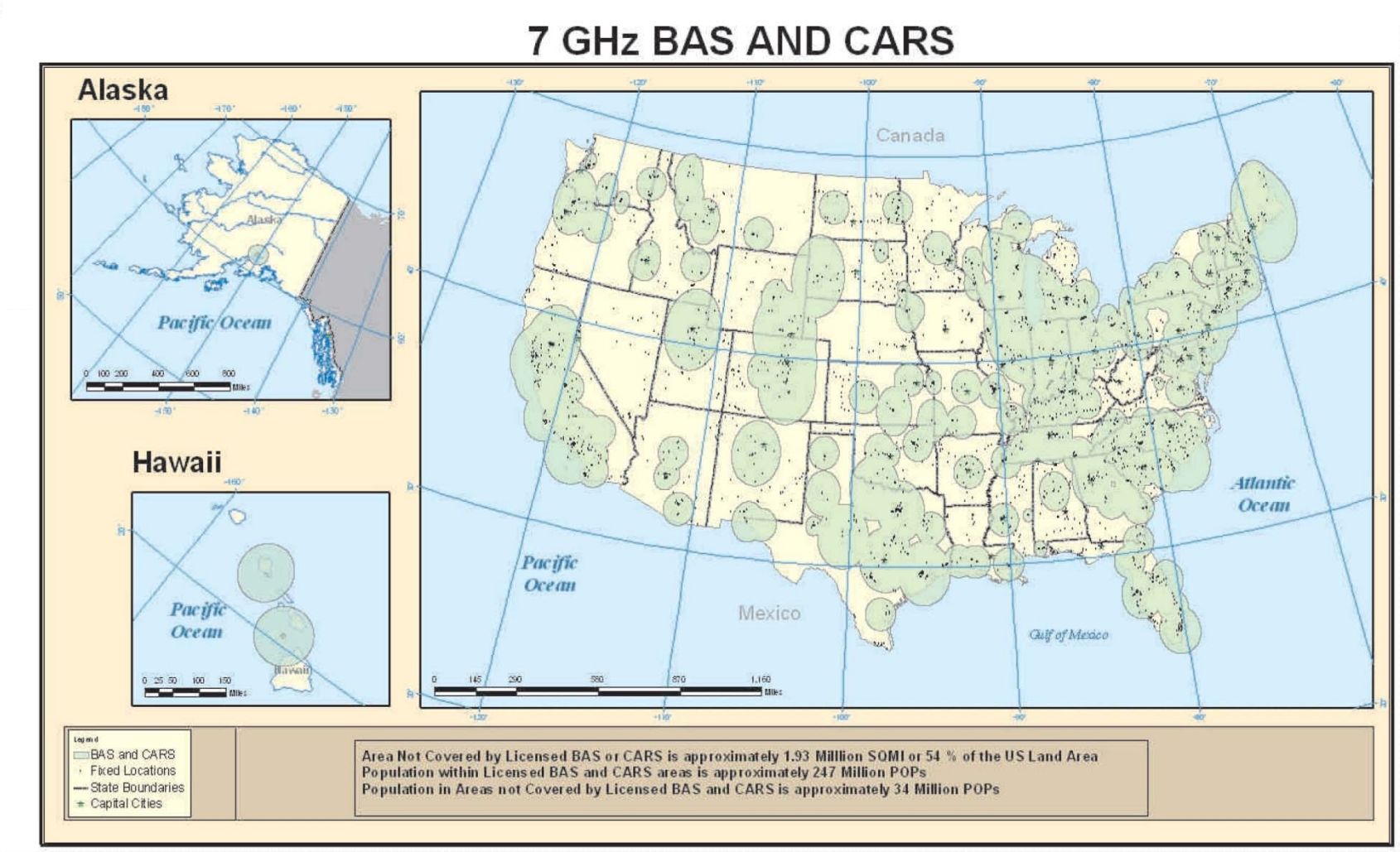
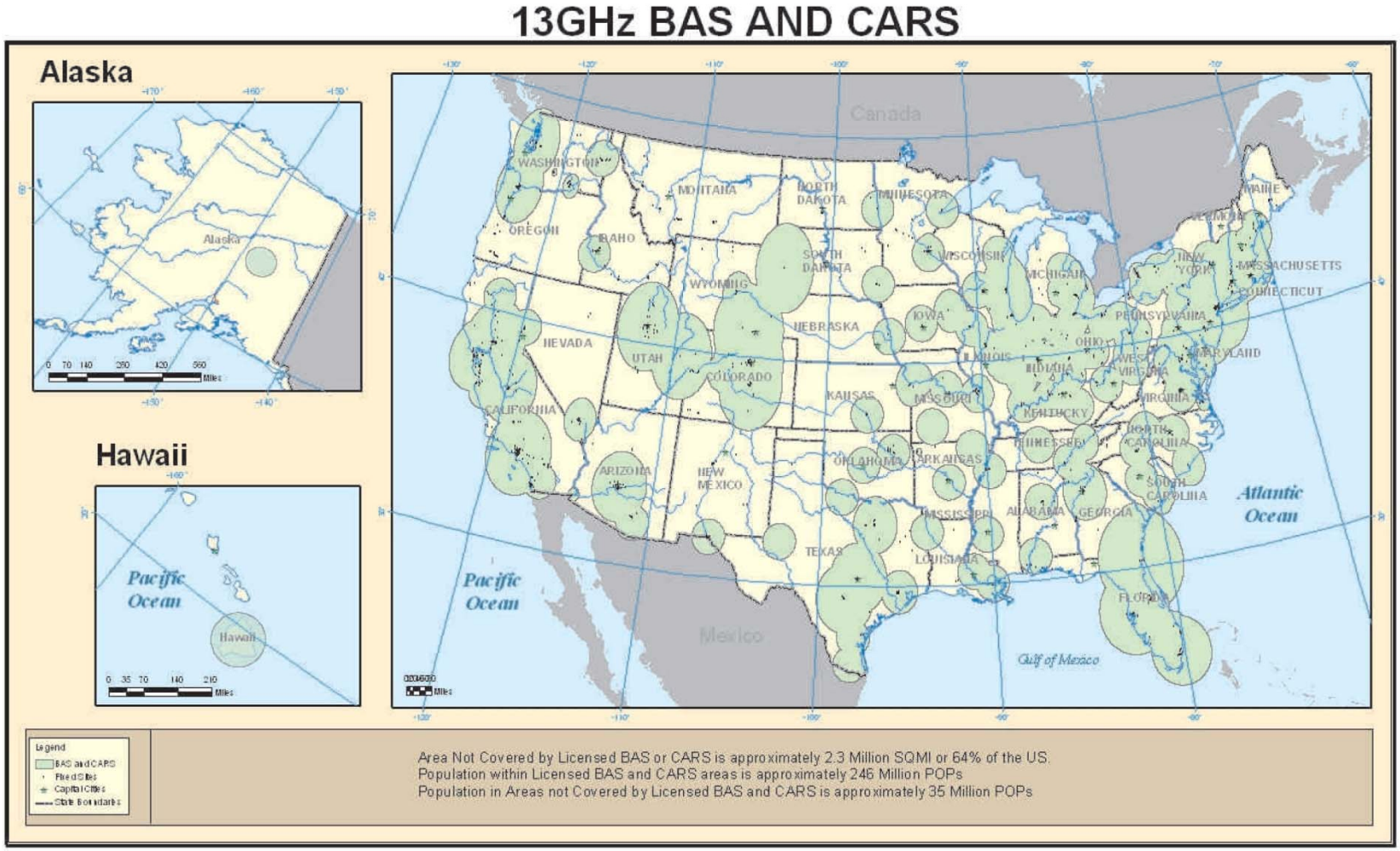
Please feel free to participate.

Fixed Service Usage of 7 and 13 GHz



Fixed Service Usage of 7 and 13 GHz



BAS-FS Sharing

- FS interference into BAS
  - No use of any frequency in a band in BAS op area
  - 7 GHz BAS Rx antenna gain 29 dB, 20 dB preamp
  - BAS Rx antenna can be anywhere in op area
  - Protect existing BAS sites or entire op area? Pfd?
  - FS (outside op area) pointed at BAS receiver
- BAS interference into FS
  - BAS mobile Tx can be pointed in any direction
  - Mobile receive sites
  - Mobile Tx EIRP 75 dBm at 7 GHz; 65 dBm at 13 GHz
  - Tx antennas on vehicles and aircraft
  - 720 hour rule

BAS-FS Sharing

- Coordination calculation concerns
  - T/I curves typically unavailable for BAS receivers
  - How to keep up with changing op areas
- FCC database inaccuracies
  - 12% of BAS mobile pickup receive sites not listed
  - 15% of BAS PTP link receivers not listed
  - 20% of BAS PTP listed have inaccuracies
  - FCC PN February 5th requires registration (74.605)
  - 86% of TV pickup license have inaccuracies
- BAS input to revision of TIA TSB 10F

Issues

- 7125-8500 MHz government band consideration for shared FS use
- Earth Stations Aboard _____
  - - vessels
  - - vehicles
  - - aircraft
  - FSS spectrum
- Use of small antennas in FS bands
- 18 GHz channel aggregation; e.g., three 50 MHz channels into a 150 MHz channel

Area License Buildout Reform

- FS license buildout rules for area licenses in the 28 and 38 GHz Bands
  - Buildout safe harbor: 4 links per million population
  - Must meet at license renewal or surrender license
  - FiberTower in bankruptcy
  - Full Commission review- denied
  - Hundreds of 28 and 38 GHz area licenses turned in
  - Many licensees affected
  - Spectrum now completely out of service
  - Alternate uses of licenses are developing- small cell

Issues

- Improved coordination procedures
- FCC database information tracking
- Reports by FCC and GAO to Congress –
  - 11, 18 & 23 GHz coordination failures/auctions
  - Receiver performance
- TIA Technical Service Bulletin 10 update:
  - Last revised 1994
  - Needs new sections: digital, IP-based, BAS-FS, long-term/short-term, adaptive mod, BAS
  - More details this afternoon

Tracking Issues

- Canadian backhaul proceeding
  - Bands at 4, 7, 7.3, 8.4, 13, 18, 33, 38, 42 GHz
- 3650-3700 MHz band activity
  - Interference to earth stations in 3.7-4.2 GHz band
  - Additional in-band interference protection
- Metropolitan Area Networks (MAN)
- 60 MHz channels in lower 6 GHz and 80 MHz channels in 11 GHz bands

Tracking Issues

- Industry Canada: 10 MHz channels in 10 GHz band
- Public safety operation in 4940-4990 MHz
- Identification of parties of interest in proceedings
- Renewal and discontinuance of operation, Docket 10-112
- Migratory birds and towers

Summary

- NSMA WG3 is an open forum
- **You** are invited to participate
- Bring spectrum issues
- Thank you!

NSMA Working Group 3

Next Meeting June 18th, 12 Noon ET, 1600 GMT

877-888-4443, #, 774-4048#

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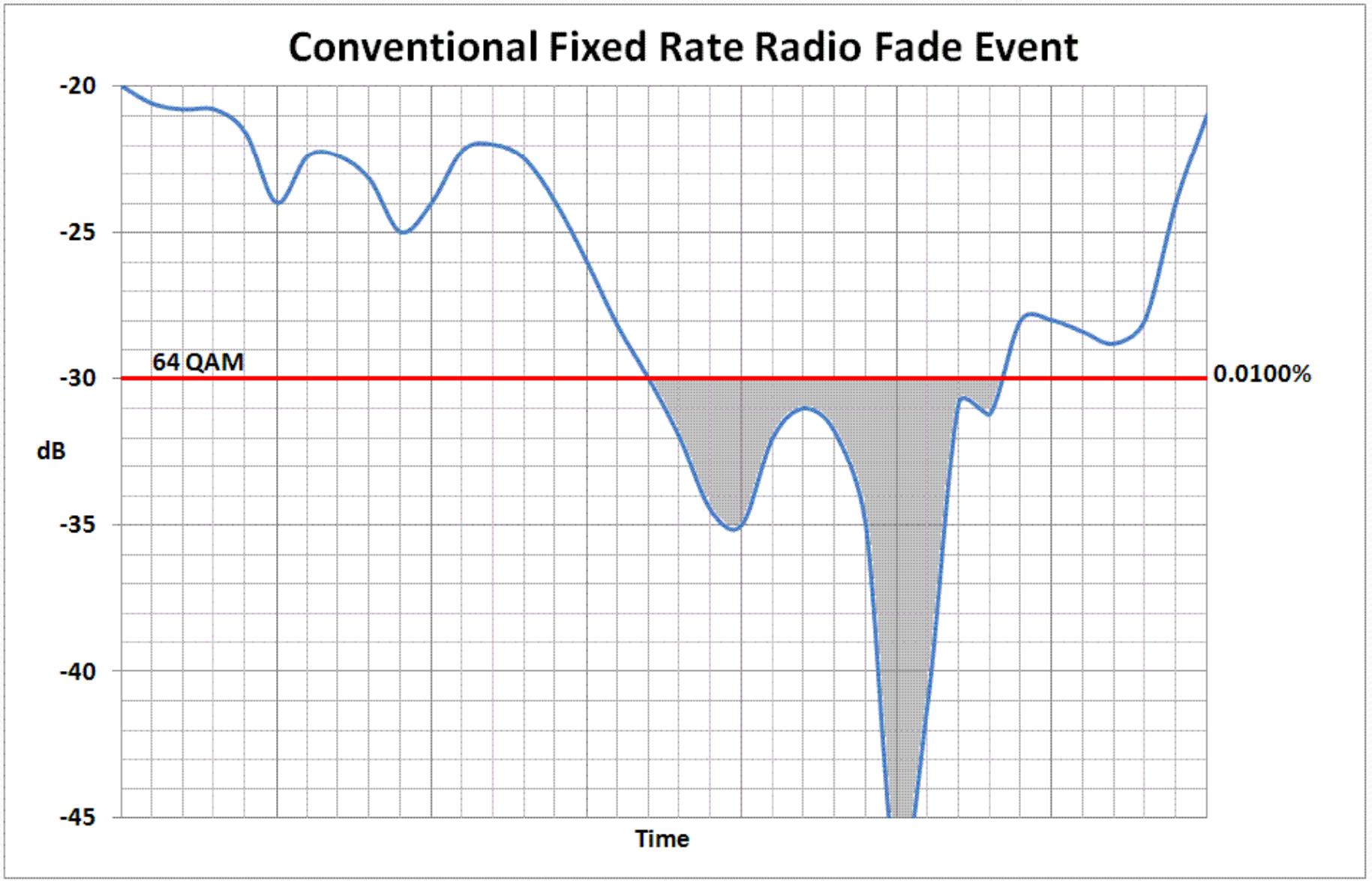
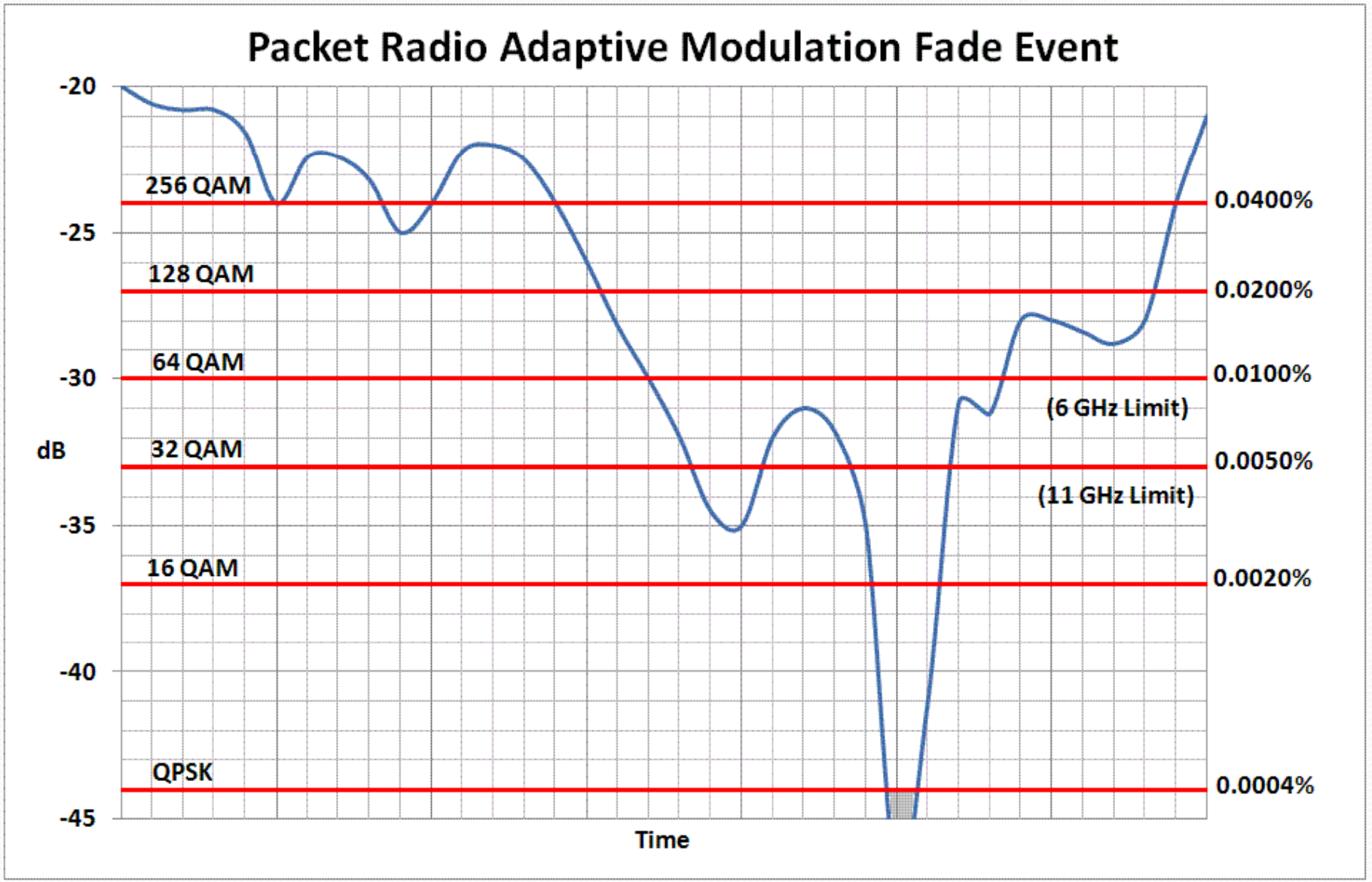
Issues

- Adaptive modulation- two ranges for adaptive modulation
  - Above FCC minimum payload requirement
    - Mines capacity out of fade margin
    - No rule restrictions- implemented on many links
  - Below FCC minimum payload requirement
    - Link would otherwise be down
    - Maintain synchronization
    - Continue with reduced traffic load
    - Requires 99.95% availability design


Conventional Fixed Rate Radio Fade Event
-20
-25
-30
-35
-40
-45
dB
64 QAM
0.0100%
Time


Packet Radio Adaptive Modulation Fade Event
-20
-25
-30
-35
-40
-45
dB
256 QAM
128 QAM
64 QAM
32 QAM
16 QAM
QPSK
0.0400%
0.0200%
0.0100%
0.0050%
0.0020%
0.0004%
(6 GHz Limit)
(11 GHz Limit)
Time