

NPRM 99-149 Study Group Update

WBFH - Jim Zyren

DS Processing Gain - Al Petrick

Federal Communications Commission

NPRM: NOTICE OF PROPOSED RULE MAKING

Amendment of Regulations for Part 15 Spread Spectrum Devices

ET Docket No. 99-231 FCC 99-149

Released: June 24, 1999

Comment Date: [75 days after publication in the Federal Register]

Reply Comment Date: [105 days after publication in the Federal Register]

FCC proposes to amend the Part 15 Section 247 rules regarding the operation of ISM spread spectrum systems.

➤ Frequency hopping systems operating in the 2.4 GHz band (2400 - 2483.5 MHz) to allow for wider operational bandwidths.

➤ Refine the method for measuring the processing gain of direct sequence systems.

➤ Goal: Facilitate development and deployment of spread spectrum technology, particularly for high data rate wireless applications.

Summary of WBFH Proposals

	Power (dBm)	Power (W)	Channel (MHz @ -20dB)	Frequencies Used	Max Dwell Per hop (ms)	Dwell per 30 sec (ms)
Now	30	1	1	75	400	400
Proposed	30	1	1	75	400	400
Proposed	25	0.32	3	75	50	400
Proposed	23	0.20	5	75	20	400
Now	30	1	1	75	400	400
Proposed	30	1	1	75	400	400

Tuesday Evening WBFH Summary

Discussed:

Prefer non-overlapping channels

CCA is better with non-overlapping channels

Faster hopping doesn't reduce interference – the contrary ...

Reduce power levels will not afford protection for legacy systems

Motions

Should we oppose WBFH, as defined in the NPRM?

Yes 13 No 1 Abstain 4

Should we support WBFH with modifications proposed by 802.11?

Yes 2 No 13 Abstain 4

Study group to draft a letter on behalf of 802.11 in opposition of WBFH as defined in NPRM 99-231. This document after approval of 802.11 plenary will be forwarded to ExCom for approval for release to FCC.

15-1-2

Motion

- The study group to draft a letter on behalf of 802.11 in opposition of WBFH as defined in NPRM 99-231. This document after approval of 802.11 plenary will be forwarded to ExCom for approval for release to the FCC.

DS Processing Gain

Processing gain (PG) shall be $\geq 10\text{dB}$

PG = improvement in SNR after filtering from coding and spreading

Today: PG (dB) = $\frac{\text{SNR with spread on}}{\text{SNR with spread off}}$

Proposed Methods:

No changes If chip rate ≥ 10 chips/symbol

If chip rate < 10 chips/symbol

Traditional CW jammer test

AND

Mathematical calculation of processing gain

OR

Jamming margin test using Gaussian Noise

Tuesday Evening DS Processing Gain Summary

Agreed:

The traditional CW Jamming margin test with a calculation of PG was sufficient

The optional Jamming margin test with Gaussian Noise needs more study relative to the impact on CCK and PBCC

Recommendation:

Agreed that knowledgeable members of the study group would draft up text defining

- A method of jamming margin test using traditional CW tests
- A method of jamming margin test using Gaussian noise
- A calculation of PG using spreading and coding
- And gather measured data if possible, to verify the methodology on CCK and PBCC

The text will be generated sent over the IEEE 802.11 reflector for comment. A teleconference call will be scheduled in 30 days with those interested to finalize the draft letter, prior to the interim meeting in September 1999.

Motion

- 802.11 plenary adopts the recommendation as stated in the summary on slide 7 of doc 99/162.