DOCKET FILE COPY ORIGINAL

JUL 1 5 1996

From: Earl J. Green <egreen@xtalwind.net>
To: A16.A16(96-102)
Date: 7/14/96 4:34pm

Crystal Wind Communications, Inc.
155 S.E. Hwy 19
Crystal River, FL 34429
Voice (352)563-5822

Dear Sir/Madam,

This e-mail is intended to be a short message to comment:

In the Matter of)
) RM No. 8653
Allocation of Spectrum in the)
5 GHz Band to Establish a Wireless)
Component of the National Information)
Infrastructure) ET Docket No. 96-102
)
In the Matter of)
)
Petition for Rulemaking to Allocate the)
5.1 - 5.35 GHz Band and Adopt Service) RM No. 8648
Rules for a Shared Unlicensed Personal)
Radio Network)

The following invitations were contained in Appendix B of the NPRM:

"D. Description, Potential Impact, and Number of Small Entities
Affected: This proposal may provide new opportunities for radio manufacturers and suppliers of radio equipment which may be small businesses, to develop and sell new equipment. We are unable to quantify other potential effects on small entities. We invite specific comments on this point by interested parties."

"G. Significant Alternatives: If promulgated this proposal will provide additional unlicenced spectrum. We are unaware of other alternatives which could provide sufficient spectrum in the immediate future. We solicit comment on this point."

On these matters, I would like to point out that Crystal Wind Communications, Inc., as a small internet service provider, is an example of a small entity that could be affected by the FCC's decision(s). We were the first ISP to start offering internet access in our essentially rural county. While competition has subsequently entered the area, none of them has shown an inclination to provide higher bandwidth connections, as we already do.

We are seriously interested in wireless connection technology as an alternative method for increasing connectivity in our community. We would like to more aggressively pursue getting more local businesses and schools connected to the internet, as we sincerely believe that it can vastly improve opportunities for the citizenry. However, it is difficult to seriously propose such things in clear conscience now, when the cost of establishing high bandwidth connections are so expensive. The recurring monthly costs of Frame Relay or dedicated lines makes it impractical for a vast portion of the population.

There are numerous "small entities" in our local community alone, that would stand to benefit from utilizing wireless communications. Some of those enities are businesses, and some of them are governmental. County gov't currently uses dedicated 56Kbps lines to tie together various remote locations. So much more could be done with higher bandwidth - lower cost connections!

I will not hold myself up as an 'expert' on radio technology and spectrum. However, I have had the benefit of receiving some fine training in radio communications during my tour of duty in the U.S. Navy. I do believe I have a reasonably good grasp of the concept of spread spectrum radio technology. The testing that I read about so far indicates that a large number of communications links can coexist on a given amount of spectrum.

It is my sincere hope that actions will be taken to allow, and encourage, use of wireless communications (especially spread spectrum technology) by the citizenry of the United States. In this rapidly changing world, our communities need to exploit every reasonable avenue to staying competitive. In my experience to date, the two

largest obstacles to overcome in getting the citizenry on to the internet are education and wiring up the final mile Your decision(s) can give us a better way to accomplish the latter, and a powerful tool to aid in the former.

Regards,

Earl J. Green
President, Crystal Wind Communications, Inc.

DOCKET FILE COPY ORIGINAL

JUL 15 1996

From: Dave Hughes <dave@oldcolo.com>
To: A16.A16(96-102)
Date: 7/13/96 9:58pm
Subject: Email Copies of Formal Filing

THIS FILING HAS ALSO BEEN MADE, FORMALLY, BY US MAILS TO THE FCC

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
) RM No. 8653
Allocation of Spectrum in the)
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Radio Network)

RESPONSE TO THE FCC INITIAL REGULATORY FLEXIBILITY
ANALYSIS CONTAINED IN APPENDIX B OF THE NPRM

The entire substantive analysis by the FCC contained in Appendix B of the NPRM under this legal requirement is quoted below:

"D. Description, Potential Impact, and Number of Small Entities
Affected: This proposal may provide new opportunities for radio manufacturers and suppliers of radio equipment which may be small businesses, to develop and sell new equipment. We are unable to quantify other potential effects on small entities. We invite specific comments on this point by interested parties."

"G. Significant Alternatives: If promulgated this proposal will provide additional unlicenced spectrum. We are unaware of other alternatives which could provide sufficient spectrum in the immediate future. We solicit comment on this point."

As the Principal Investigator of a series of field tests of wireless data communications for education, with emphasis on the examination of the value of shared no-license Part 15 devices, I file these comments on behalf of the technical staff of this project, which represent no commercial manufacturer or service, nor government agency, (and not the NSF itself) but only the considered judgements of independent investigators evaluating wireless data communications in the context of the broadest public policy interests. This project's status, progress, and findings can be accessed at http://wireless.oldcolo.com

We do not disagree with the mild speculations that this proposal
'may' provide new opportunities for small business manufacturers and suppliers of radio equipment.

In our studies of wireless for education, we have encountered scores of small businesses, would-be business persons taking community or junior college courses helping them learn how to use 'The Internet' in their business, and community leaders of small towns who see the potential of bi-directional connectivity to the Internet being key to their economic survival.

We strongly disagree that the only 'small entitites' affected by the outcome of this proposal 'may' be small radio suppliers.

Very large numbers (to the 5 million range) of existing or potential very small businesses of all type - from self-employed, work at home individuals offering products or services over the Internet, through small businesses occupying commercial office, retail or manufacturing space, can be either positively or negatively affected by their ability to employ longer range (1 to 15km or more) shared spectrum no-licence wireless as an alternative to more costly
(recurrring charges) wired connectivity to the nearest points of presence.

General public reports on US Web Sites alone, ranging from estimates of 200,000 or more, repeatedly report on sites set up in people's homes, home-offices, and small businesses. These operate, bi- directionally for the purposes of small business or individual professionals marketting, online publishing, online catalog sales, and provision of other services. Not to be overlooked is also the provision of local small scale ISP services in small towns, suburban neighborhoods, where low cost continuous 24 hour connectivity to the
Internet is essential 'by' the ISP, as well as the potential for such ISPs to provide higher (than 28.8 telephone modem) connectivity links to themselves from customers.

In fact the most economically revolutionary impact of the combination of the availability of low cost, multi-user, multi-tasking microcomputers costing from $3,000 to $7,500 (NT, OS2,
Win95, Linux, MacOS Webstar systems), with 56kbs or above, TCP/IP connectivity to the Internet through some local larger ISP, can be felt in small business. The proportion of the total monthly cost attributed to the 'local loop' charges for dedicated data services can range from 20 to 40% of the total cost of connectivity.
No-licence shared spectrum wireless connections between the premises of such small business, and the local Internet Point of Presence, where the only cost is that of radios, such as those currently in the 902-928 MHz and 2.5 GHz bands - from $1,250 for FreeWave 115kbs
(serial line) radios that can operate up to 20 miles, to $7,500
Solectek 2Mmps radios that are rated at 25 miles - could be merely the forerunners of whole new classes of radios with much greater processing gain, much lower potential for interference, mass produced (where, because of the current restrictive FCC rules for such radios has not spawned a large industry) yet still extremely valuable for the 'last mile' of small business connectivity.

What seems constantly to be overlooked in predicting impacts on US
Society of connectivity - and this FCC staff analyses entirely overlooks - is that, because of the microcomputer and Internet revolutions, Americans are no longer just passive 'consumers' of communications services. They are also becoming innovative, entrepenurial, small scale 'producers' from non-traditional locations. It is wholly possible today for an individual to net from $30,000 or more annually operating entirely from one's home, with less than $10,000 capital expenditures, so long as continuing connectivity costs are low enough. Never before in modern US economic history has this been possible. And with the growth of small business employment - far exceeding the total of all large business growth in labor over the past 20 years, accelerating large business downsizing, this trend of small, self employment, and creation of 'information and communications' dependent businesses will grow massively. The total costs of connectivity, therefore are crucial determinents of the lowest 'threshold' of access by small business to global nets and markets. A 25% lower cost of such connectivity by use of no-licence, high data rate, secure and reliable wireless, can make a big difference.

A simple comparative model, the very first level above a
28.8 modem based business, is shown below. Typical Colorado Springs prices.

Linux, NT, OS2 Web Server requiring 56kbs IP service	RBOC	Wireless
DSU/CSU Router	$1,500	
Part 15 Radio		$1,250
Monthly local loop charges	100	0
Monthly charges at POP	300	300
First 5 Year Cost	$25,500	$19,250

T-1 level service (typical Colorado Springs prices for business)

NT, Linus, OS2, Mac or Sun Server		
DSU/CSU Router	$2,500	2,500

Part 15 2Mbps Radio		7,500
Monthly local loop charges	650	0
Monthly POP charges	1,500	1,500
	---	---
First 5 year cost	$131,500	$100,000

The difference of $31,500 or approximately $6,000 a year for very small businesses is substantial. In rural areas, the monthly
RBOC charges for a T-1 local loop connection 25 miles would be closer to $1,000 a month than $650, which is a quoted urban US West charge. Or $60,000 over 5 years. A very substantial first 5 year
(the crucial startup years for small business) cost.

Unless the aim of public FCC policy is to favor only larger commercial wireless service (auctioned services), or wired (telephone or cable) companies, then the provision of longer range, no-licence wireless radios, can have direct bottom-line effects of significant magnitude on hundreds of thousands of existing small businesses and help spawn millions of new US small businesses of all types. And would be, not so incidentally, very pro-competitive, as (1) between wireless and wired services, and (2) between radio manufacturers all of whom can compete in the shared spectrum space.

s/
David R Hughes
Principal Investigator
NSF Wireless Field Test Project
NCR-9527664
July 13th, 1996

DOCKET FILE COPY ORIGINAL

From: Dave Hughes <dave@oldcolo.com>
To: A16.A16(96-102)
Date: 7/13/96 9:57pm
Subject: Email copies of Formal Filing

THIS FILING HAS ALSO BEEN MADE, FORMALLY, BY THE US MAILS TO THE FCC

JUL 15 1996

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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Rules for a Shared Unlicensed Personal)
Radio Network)

COMMENTS OF THE NATIONAL SCIENCE FOUNDATION
WIRELESS FIELD TEST FOR EDUCATION PROJECT

As the Principal Investigator of a series of field tests of wireless data communications for education, with emphasis on the examination of the value of shared no-license Part 15 devices, I file these comments on behalf of the technical staff of this project, which represent no commercial manufacturer or service, nor government agency, (and not the NSF itself) but only the considered judgements of independent investigators evaluating the potential for US education of wireless data communications in the context of the broadest public policy interests. This project's status, progress, and findings can be accessed at http://wireless.oldcolo.com

We oppose the Apple Computer NII Band proposal (RM-8653) as originally submitted for a new, non-spread spectrum shared wireless service of 150Mhz between 5.725 and 5.875Ghz, at 1 watt of power. Thus we agree with the FCC's not proposing to create such a new service.

We support the WINForum (RM-8648) request for low power SUPERNET service of no more than -10 dBW power across 200Mhz in the 5.15
- 5.15Ghz bands only, as proposed by the FCC in the NPRM.

We oppose the FCC NPRM proposed extension of the WINForum request, for an additional 150Mhz of bandwidth into the 5.725 -
5.875GHz band range.

We strongly feel that the public use objectives originally sought by the Apple Computer Petition for community networking by longer range, higher power shared-spectrum radio rules, are of paramount public policy importance. In fact it appears Congress agrees with us, when it mandated the FCC in the 1996 Federal Telecommunications Act, after the above Petitions were filed, to provide for advanced, affordable, telecommunications services to all citizens, and in particular schools and libraries.

However the failure of Apple Computer to provide sufficient or convincing technical justifications, while excluding spread spectrum techniques, for sharing spectrum in the 5.725-5.875 bands without interference with either existing Part 15 services in the same bands, or their own radios once any significant density of radios are deployed in the same area, leads us to conclude that their proposal is unworkable. And will, if approved, in fact, threaten to degrade the ability of radios designed to operate, spread spectrum at 1 watt of power, in the 125Mhz of spectrum between

5.725 and
5.850 (Part 15.247 rules) to achieve the same objectives

We see no objection to the WINForum proposal for new low power service in the 5.15 - 5.35 GHz range. This will permit much faster wireless LANs to be designed for in-building use, meeting a growing need. Though we are not convinced it is either aimed at, nor will as significant for schools or libraries as its proponents claim when justifying it.

Additionally, we do not see that the meeting of that new need for short range, low power, high speed, in-building wireless connections, will, of and by itself, meet the far greater need for longer range, between building, across towns, and between data points of presence, shared no-license data communications. The 200
Mhz being allocated in the 5.15 - 5.35 Ghz bands appear to be sufficient to permit the design and operation of new classes of more advanced radios. Adding an additional 150 Mhz to that allocation appears, to us, to be extending capabilities only 'at the margin' and is not centrally required. And it will be undesirable if it threatens to degrade the performance of radios providing other services.

Thus we oppose the FCC's own proposal of extending the SUPERNET service originally requested by WINForum, from the 5.15 - 5.35 GHz to the 5.725 - 5.875 bands, even at maximum transmitter power of only -10 dBW (approximately 50 meters range) on the grounds that this would cause interference with already permitted Part 15.247
Rules radios, which radios can perform data transmission tasks under current rules for 'community networking' purposes that the Apple
Computer proposal purports to do. Permitting the FCC NPRM proposed low power services in the same 'upper' NII/SUPENET bands could seriously degrade the ability of services transmitting point to point under Part 15.247 rules at longer ranges between buildings - such as schools of a district, or across cities, or between rural towns and the closest points of presence of other services such as the Internet. It can also interfere with Part 15.247 in-building LAN devices which are already permitted.

In other words, if a school or institution were using low power high speed in-building LANs in the 5.725 - 5.850 bands, and a Part
15.247, 1 watt radio, with directional antenna operating at a distance - as measured in kilometers, attempted to transmit to a receiving antenna in the same building (or on the same signal pathway), the interference could easily be sufficient to prevent communications entirely, if not simply degrade it.

Since radios operating under Part 15.247, in 125 Mhz of bandwidth at
1 watt are capable of providing such shared spectrum service at ranges at least as far as the Apple Computer proposed 15km, without any new service such as Apple Computer's proposed service, further rulemaking by the FCC should not encourage degradation of that existing capability

While the Apple Computer proposal is rationalized in terms of
'community networking,' - a general public telecommunications goal which can be fully justified - it is a rather difficult concept to quantify in terms of spectrum allocation and management - range, power, and sustainable bandwidth. But it is not difficult to quantify the demonstrable needs - including those required right now
- for extending no-license wireless services to US educational institutions. And since schools and colleges are invariably located, and whose areas serve where 'people' (who make up 'communities' live) if new rules support shared spectrum, no-license wireless services that support 'education' in 'communities' then we hold that the greater part of what Apple Computer referred to as 'community networking' needs will be met also. So the remainder of this analyses is focused on the impact of the existence or denial of long range no license communications on educational institutions.

Our studies of the real and comprehensive needs of typical educational institutions - from K to 12, community and junior colleges, and higher education campuses, in both rural and urban areas, for shared spectrum, no license data communications clearly indicates that the needs are in the following priority and order:

1. Connections between the dispersed building of a school district or college campus. Usually high bandwidth, but moderate distances - 1 to 10 miles. Greatest need because of redundant recurring costs if those 'local loop' needs are only served by commercial telephone, or coming cable company services.
2. Connections between the hub building of a district and the nearest point of presence. Up to 25 miles. A major problem for rural communities, small towns, and sprawling suburbias
3. Connections at higher than POTS data rates from the homes of students and teachers. Bandwidth's above 56ks at ranges to 20 miles. A need - multi-media bandwidth - that will only grow in the future, because of the already

inadequacy of 28.8bps modem telephone service bandwidths.

4. Internal building data communications. Least need, because of wide array of alternatives - from wired (no recurring cost) lans, and wireless LANs operating under Part 15 current rules.

There are 16,438 separate public school districts, 84,175 public schools, over 23,000 private schools, over 4,000 colleges and universities, and 15,679 public libraries distributed throughout all inhabited 'communities' of the United States, all of which require at least connectivity bandwidth between 56kbs and 2mbs costing from $100 a month each link to $1,000 or more by conventional commercial wired local connections. If these institutions lack the alternative of being able to connect up their networks by other than commercial charge wired, cable, or radio 'services' - such as by purchasing high bandwidth, long (25 mile) range, reliable, secure, no-license radios ranging today from $750 to $8,000 on a one time basis, the effect will be to continue to retard the extension of advanced telecommunications services to and within all communities of the United States.

We take serious note that the deregulatory aspects of the new Telecommunications Act are predicated greatly on the idea of promoting true 'competition' between telecommunications vendors. We have observed that, particularly in rural areas, but also in urban areas where there is no, and will not be for some time to come, any alternative local loop wired infrastructure, that schools, libraries, and colleges have no practical alternative if they want to get Internet connectivity than to retain the services of local loop - telephone company - providers. At whatever price is offered.
Practically speaking, there 'is no' competition. However the ability of a school, library, or college to buy radios from competitive vendors which can provide the same data speeds across cities, or between towns up to the 25 mile range, without license on a shared spectrum basis, and link the institution to a point of presence, or link the buildings of a school, for example, to each other. That is real competition for local loop providers.

Our studies show that the difference in cost to the above type public institutions for connectivity to the Internet alone, between buying commercial services, and buying radios with comparable bandwidth capabilities, over 10 years, can amount to a 5 to 10 to 1 cost ratio of commercial services versus no-license radio connections for the local portion of the network costs. In one specific current case in a rural area of Colorado, with 30 communities and 14 separate school districts, the difference between extending T-1 data links from a college in the one central town to the 14 districts by US West tariffed telephone circuits, and extending 25 mile spread spectrum radio T-1 services to the same school districts is $1.2 million (telco) versus $134,000 (wireless) over the first 10 year period. That is an enormous practical cost difference to those tax supported rural school districts.

Appeals to commercial service providers to offer, over a short term, 'free' Internet connectivity is not a long term, scalable, or sustainable solution to this problem. Nor will be the prospect of all wireless services being a commercial cost service. In fact the urging by the FCC - which is currently observable - of such 'free' connectivity is anti-competitive. First of all, only the larger Internet providers would be in position to offer such free connectivity services for any length of time. And the genuine competition provided by no-licence radio vendors would be further inhibited. At the end of two year free Internet connectivity services, institutions would still be faced with buying market priced connectivity, while no-licence radio services do not face that day of reckoning. We have specifically observed in rural areas which have been past recipients of connectivity 'grants' that when the grant money runs out, the service has often been dropped by schools. (US West $250,000 grant to schools of the San Luis Valley of Colorado for 'compressed video' services. When the grant funds ran out in the early 90's, the school districts could not justify the $7,000 per year T-1 local loop costs, so all connectivity was severed)

But, while the proposed WINForum SUPERNET low power services will provide some useful new services to both education, thus communities, and while the Apple Computer proposal can do nothing for the NII service that is not already permitted under Part 15.247 rules, neither one in these Petitions really addresses the public needs for adequate shared spectrum, no-license connectivity. They are marginal improvements at best.

While we fully understand, that under FCC formal procedures for rule making, this is only the rulemaking response to Petitions submitted, we would like to make it clear that we feel that the resolution of RM-8648 and RM-8653 with any of the proposed combinations, in no way seriously satisfies the shared no-license spectrum needs of either US communities, or education, for alternatives to commercial radio. telephone, or cable data 'services,' which needs can clearly by technologically and economically met by much bolder and visionary rules which encourage US manufacturers to make, and profit from, new generations of radios designed to operate in the no-license spectra without the necessity of justifying them by providing charged services.

The central issue of potential interference between no-license radios designed under FCC rules, and with current technologies, has been dealt with decisively in theoretical studies and simulations.
The July, 1995 Doctoral Thesis by Timothy Shepard, MIT
"Decentralized Channel Management in Scalable Multihop
Spread-Spectrum Packet Radio Networks" conclusively demonstrates that 'billions' of radio nodes can now be automatically managed in the same electromagnetic space.

Ruled right, with sufficiently wide bandwidth, minimum standards for process gain in the radios and correspondingly much higher efficiency in data throughput as well as tolerance for background as well as other-radio noise, the issue of interference potential for many bands of spectrum could become a practical non-issue for whole segments of the electromagnetic spectrum.

Thus we do not believe that '... market forces under a licencing scheme' for longer range radios '...would significantly increase spectrum efficiency' simply because it is not necessary if the rules for new radio services are right. So it is totally outdated thinking to continue to use the old paradigm of 'value of spectrum' as if there is an absolute scarcity and suggest solving it by auction to the highest bidders, who would get exclusive use of its bands. A totally new paradigm is needed, even if only exercised in limited bands for starters. And the 'shared spectrum' no-license arena is where that paradigm should be born.

CONCLUSIONS AND RECOMMENDATIONS

We oppose the Apple Computer NII Band proposal (RM-8653) as originally submitted for a new, non-spread spectrum shared wireless service of 150Mhz between 5.725 and 5.875Ghz, at 1 watt of power.
Thus we agree with the FCC's not proposing to create such a new service.

We support the WINForum (RM-8648) request for low power SUPERNET service of no more than -10 dBW power across 200Mhz in the 5.15 -
5.15Ghz bands only, as proposed by the FCC in the NPRM.

We oppose the FCC NPRM proposed extension of the WINForum request, for an additional 150Mhz of bandwidth into the 5.725 - 5.875GHz band range.

We strongly recommend that the FCC, therefore, as part of the decision on these pending docket matters, acknowledge the inadequacy of any rules made under this Rule Making action, in light of current and project technological possibilities, and resolve to commence work on its own initiative - by issuance of a new Notice of Inquiry, to achieve the aims of the partial vision of better spectrum-based digital services represented by these timid and inadequate Petition proposals by Apple Computer and WINForum. And to do so by a far different and far more promising, as well as interference problem-solving means now wholly made possible by the proper coupling of technological means and supporting rules.

s/
David R Hughes
Principal Investigator
NSF Wireless Field Test Project
NCR-9527664
July 13th, 1996

DOCKET FILE COPY ORIGINAL

JUL 15 1996

From: Craig S. Bell <goat@aracnet.com>
To: A16.A16(96-102)
Date: 7/15/96 3:29pm
Subject: Please keep radio spectrum free and public

-----BEGIN PGP SIGNED MESSAGE-----

Hello, I'm Craig S. Bell, system admin and network engineer for an ISP in the Portland, Oregon area. I'm for allocating bandwidth for public data usage as laid out in the proposal.

I feel that it is most important to keep the bandwidth in this country free and public; the Federal Government manages it for our benefit, and this usage of bandwidth will have a very high ratio of benefit for many, many people.

I hope to use this bandwidth to connect non-profit organizations, schools, and small businesses to the internet using our service. This would give us alternatives where otherwise we might not have them.

I feel that all organizations and citizens, even those in rural or telephony-poor areas, deserve reliable, fast, inexpensive alternatives. The telco shouldn't be the only means by which the internet can come to your little corner of America.

Thank you very much for your time and consideration.

regards,
Craig S. Bell (NIC: CSB)
aracnet.com network engineer

Craig

- ---------- aracnet.com -- Portland's loudest electrons ++ info@aracnet.com
Ring +1 503 626.6873 V.34 (28.8K) voice: 626-7696 fax: 626-8675
aracnet.com info & prices

-----BEGIN PGP SIGNATURE-----
Version: 2.6.2

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DOCKET FILE COPY ORIGINAL

JUL 15 1996

From: John Navas <JNavas@NavasGrp.Dublin.CA.US>
To: A16.A16(96-102)
Date: 7/14/96 4:47pm
Subject: 96-102 comments

This is to indicate my strong support for filings by THE NATIONAL SCIENCE FOUNDATION WIRELESS FIELD TEST FOR EDUCATION PROJECT specifically:

COMMENTS OF THE NATIONAL SCIENCE FOUNDATION
WIRELESS FIELD TEST FOR EDUCATION PROJECT

and

RESPONSE TO THE FCC INITIAL REGULATORY FLEXIBILITY
ANALYSIS CONTAINED IN APPENDIX B OF THE NPRM

Best regards,

John Navas mailto:JNavas@NavasGrp.Dublin.CA.US
http://www.aimnet.com/~jnavas/
The Navas Group
11901 West Vomac Road voice: 510/828-6764
Dublin, CA 94568-1050 USA fax: 510/828-6763

DOCKET FILE COPY ORIGINAL

JUL 15 1996

From: Sam Wood <sam@fore.com>
To: A16.A16(96-102)
Date: 7/15/96 9:58am
Subject: comments

Before the
FEDERAL COMMUNICATIONS COMMISION
Washington, D.C. 20554

Comments for)
)
ET Docket No. 96-102)
RM-8648)
RM-8653)
)
)
Notice of Proposed Rule Making
Provide for Unlicenced NII/Supernet
Operation in the 5 Ghz Band

To: The Acting Secretary:

From: Samuel F. Wood WB6, BUP
12648 La Cresta Court
Los Altos Hills, CA 94022
415-941-8000
sam@msr.com

My name is Samuel F. Wood. I am an amateur radio operator. I am filing comments on the NPRM on behalf of my self and the Midpenninsula System Radio (MSR) and the California Amateur Telephone Society (CATS), loosely associated amateur groups that have been using the 5.8 Ghz band since 1974. I have previously filed comments on the Apple Computer Petition for this NPRM. In those comments I mentioned that we have an amateur microwave network operating in that band, that the network is interconnected with the State Office of Emergency Services (OES), and that the network has been used to carry emergency traffic for the Loma Prieta earthquake and the Oakland Fire.

As users of the 5.8 Ghz band we are vitally concerned about harmful interference that may be generated by NII users. First we feel that the 5.8 Ghz band is not well suited for wireless LANS. This sort of activity should be carried out on lower frequency bands. This band is well suited for point to point communication where line of site exists between users. High attinuation exists when obsticles are inserted between users making it not well suited for non line of site operation even at close distances. However, if for nontechnical reasons this band must be utilized for this purpose, then every attempt must be made to minimise harmful interference to existing users. The consideration of NII devices as Part 15 devices, with the requirement of low power and spread spectrum operation, should keep harmful inerference to a minimum. We believe that allowing NII users to increase power or operate fixed frequency would not be in the public interest as it would cause harmful interference to the existing users of the band. The "listen before transmit" approach will not mitigate the problem because the operation of the other users is usually full duplex, and the NII users will not know the frequency offset. Just because they cannot receive the signal with their low gain antenna and insensitive receiver does not make the signal absent, and therefore ok to transmit.

We believe that the proper way to share the band would be to provide licensed, co-ordinated low power data networks. The licensing would insure that the needy users such as the Schools and Hospitals would get use of the band and it not get used up by the frequency hungry and powerful users such as the telephone companies, the computer companies, and radio companies. We believe co-ordination is necessary to prevent harmful interference to existing users. The co-ordination would insure that the eqiipment purchased today would in fact work tomorrw and not be rendered worthless due to harmful interference generated by the newest user down the block.

For data linking requirments other than those using the wireless LANS discussed previously we believe that the existing part 15 products under development are more than adiquate. These new products can easily support the linking requirments without subjecting the existing 5.8 Ghz users to the harmful interference that would be generated by high power part 16 type data users.

Thank you for your consideration.

Samuel F. Wood

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JUL 1 5 1996

From: Jean Armour Polly <polly@well.com>
To: A16.A16(96-102)
Date: 7/15/96 9:36am
Subject: JP's Comments on Wireless Rulemaking

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of
RM No. 8653
Allocation of Spectrum in the
5 GHz Band to Establish a Wireless Component of the National Information Infrastructure
ET Docket No. 96-102

In the Matter of
Petition for Rulemaking to Allocate the
5.1 - 5.35 GHz Band and Adopt Service RM No. 8648
Rules for a Shared Unlicensed Personal
Radio Network

RESPONSE TO THE FCC INITIAL REGULATORY FLEXIBILITY
ANALYSIS CONTAINED IN APPENDIX B OF THE NPRM

The entire substantive analysis by the FCC contained in Appendix B of the NPRM under this legal requirement is quoted below:

"D. Description, Potential Impact, and Number of Small Entities
Affected: This proposal may provide new opportunities for radio manufacturers and suppliers of radio equipment which may be small businesses, to develop and sell new equipment. We are unable to quantify other potential effects on small entities. We invite specific comments on this point by interested parties."

COMMENTS OF JEAN ARMOUR POLLY

I wish to submit these comments in response to the above request for information, and in support of Apple Computer NII Band proposal filed by
Apple Computer, Inc. ("NII Band Petition"), in the above referenced matters. I am filing as an individual, professional librarian, and an
Internet Society Trustee emerita.

I strongly support Apple's NII Band Petition, because it will bring affordable Internet connectivity to rural areas, including Indian reservations, traditionally underserved by utilities, let alone Internet
Service Providers (ISPs). Accordingly, I would recommend the farthest possible reach of these wireless services, in the magnitude of many tens of kilometers, not just several tens of meters. Although the low end of wireless reach would be useful for wireless LANS inside schools, libraries, and other facilities, it will do little to get Internet services to the doorstep in the first place.

Two years ago, I was a co-principal investigator in the landmark study:
"Project GAIN: Connecting Rural Public Libraries to the Internet." (further information at my home page: http://www.well.com/user/polly/rantsnraves.html) At the time I worked for
NYSERNet, which was at that time a regional ISP of the NSFNet. We connected five rural public libraries and one Indian Nation school to the Internet via SLIP TCP/IP. However, the reach of our network did not go into a local calling area for many of these sites. Four of the six sites were faced with long distance charges to log into our POP (Point of Presence). The longest distance was about 80 kilometers, the shortest, about 7 kilometers.

The library with the shortest long distance hop was faced with average long distance charges of $150-$200 a month, as this was the only part of the project we could not control. The more they became familiar with the resources of the Internet, the more their communities wanted to use it.

This led to more Internet use and higher phone bills every month. This particular library had an annual budget of $20,000, inclusive of salaries, books, and other materials, so this much in telecommunications charges was a huge bite of their total operating budget. Further, since Internet use was a variable, long distance charges could not be budgeted for-- small libraries and schools can only budget for flat-fee service. Although many ISPs now offer this flat fee service, the phone company still charges by the minute for long distance access to the ISP's POP.

Talk all you want about the information economy and the information haves and have-nots. The Net's not essential for life in the sense that food and water are. However, it may well be necessary for economic development of both communities and individuals. The reach of the Net into these "geographically-challenged" areas may never become a reality unless this wireless NII band is enabled. I urge the Commission to support the Apple proposal.

Respectfully submitted,
Jean Armour Polly

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