ORIGINAL

DOCKET FILE COPY ORIGINAL

RECEIVED
APR 2 2 1994
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

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

In the Matter of	)	
	)	
Amendment of the Commission's Rules to Establish New Personal Communications Services	)))	GEN Docket No. 90-314

To: The Commission

RESPONSE OF APPLE COMPUTER, INC.
TO PCS TASK FORCE PANEL DISCUSSIONS

The Commission offered parties an opportunity to respond to the views expressed during the series of panel discussions recently held by the Commission's PCS Task Force. Apple Computer, Inc. ("Apple") hereby submits this response to certain matters regarding unlicensed PCS raised during the panel discussions.[1]

The Task Force's discussions highlighted certain key facts:

- Voice PCS services, both licensed and unlicensed, will essentially be an extension of existing voice services, including cellular radio, ESMR, and cordless telephones. Data-PCS, on the other hand, is a completely new PCS technology.

- Unlicensed Data-PCS devices may, on occasion, communicate with a "fixed" device, such as a file server. This does not, however, mean that Data-PCS devices are "coordinatable" or that they can be deployed in advance of band clearing.

- The current split of the unlicensed band treats voice and data services equally, but not equitably. It should, therefore, be modified to ensure that each of these services will be able to develop as envisioned.

---

[1] As requested by Mr. Haller, Apple will not reiterate the statements it has made in previous filings. These statements do, however, provide support for, and in some cases contain more detailed explanations of, the points raised in this Response.

No. of Copies rec'd 0+9
List A B C D E

- The Commission should not reduce the existing 40 MHz allocation for Data-PCS or move this allocation to another part of the emerging technologies band.

- UTAM does not represent the interests of all users of the unlicensed band and is ignoring its obligation to clear the unlicensed band as promptly as possible. Instead, it is focusing entirely on early deployment of coordinatable voice devices.

These points are expanded upon below.

I. THE FACT THAT A DATA-PCS DEVICE MAY, ON OCCASION, COMMUNICATE WITH A "FIXED" DEVICE DOES NOT MEAN THAT THE UNLICENSED DEVICE IS "COORDINATABLE" OR ABLE TO BE DEPLOYED IN ADVANCE OF BAND CLEARING.

As discussed in greater detail in a letter from Dr. David Nagel to Dr. Thomas Stanley dated April 14, 1994,[2] a Data-PCS device can communicate with a "fixed point" and still be "purely nomadic." Fixed devices, such as file servers, will permit Data-PCS devices to connect to an in-building network, the Internet, or other wide area networks through a wireless or wired gateway. They will not, however, function as a base station controlling the transmissions of Data-PCS devices, or disabling the devices from communicating when outside their range.

The fact that, on occasion, Data-PCS devices will communicate with fixed devices should not obscure the fact that "nomadic" computing is the defining characteristic of Data-PCS. If the Commission adopts a spectrum allocation plan based upon the mistaken belief that Data-PCS devices can be operated on a "coordinated" basis — *i.e.*, usable only within range of a fixed controller, and only where a prior coordination has been successfully conducted and the installation of the device has been verified by UTAM — it will defeat the very purpose of Data-PCS and, therefore, block its development.[3]

---

[2] A copy of this letter was filed in the public record of this proceeding.

[3] Several hearing participants discussed the potential for data services to be provided over licensed PCS networks. This does not mitigate the need for Data-PCS, because these services will suffer from shortcomings similar to those described regarding SMR and cellular networks, as discussed in Dr. Nagel's statement and other previous Apple filings.

II. THE COMMISSION SHOULD ALLOCATE THE RELATIVELY LIGHTLY LOADED 1910-1930 MHZ BAND TO UNLICENSED ASYNCHRONOUS DEVICES.

— The Current Allocation Ignores the Fundamental Difference Between Unlicensed Voice Devices and Unlicensed Data Devices

Equality and equity are not synonymous. In splitting the 1910-1930 MHz band between unlicensed isochronous (mostly voice) and unlicensed asynchronous (mostly data) applications, the Commission ignored the fundamental difference between these applications: the former are primarily "coordinatable" and, therefore, can be deployed immediately; the latter are primarily "non-coordinatable" and, therefore, cannot be deployed until the band has been completely cleared on a nationwide basis. As a result, the Commission reached a decision that treats voice and data equally, but not equitably.

An allocation of the lightly loaded spectrum may make it somewhat easier and more convenient to deploy unlicensed voice devices promptly. Even in the more heavily loaded spectrum, however, coordinated deployment can proceed. UTAM states that it has commitments of $6 million from four member companies,[4] which it can use to clear selected links in designated market areas and thereby expand the areas in which coordinated deployment is possible. For Data-PCS, however, any allocation other than the 1910-1930 MHz band will make it impossible to clear a 10 MHz block of spectrum, the minimum necessary for deployment, within a reasonable period of time.

UTAM has argued that the allocation of the 1920-1930 MHz band to voice products is necessary for, and will benefit, unlicensed data, in that only through

---

[4] UTAM Statement at 18. UTAM states that it has been advised by its Board that the change in the unlicensed allocation would "render unlicensed PCS economically infeasible for voice manufacturers," id. at 15, and that the $6 million in financial commitments would be withdrawn if the allocation were changed. See UTAM *Ex Parte* Statement, GEN Docket No. 90-314, at 6 (filed April 7, 1994). These assertions should not be credited, at least on the record currently before the Commission. Several parties to this proceeding have described the benefits of a contiguous 40 MHz allocation. These benefits would mitigate any increased burden that a changed allocation might cause, and such an allocation would promote long-term spectrum efficiency. Moreover, other than UTAM's assertions there is nothing in the record regarding the identity or level of "commitment" of its member companies. Therefore, before the Commission can place any decisional significance on UTAM's assertions, the companies in question should be required to provide specifics.

early deployment will UTAM be able to raise the funds necessary to clear the unlicensed asynchronous band. Its statement to the Task Force, however, implies very strongly that dollars raised through early deployment will not, in fact, be used to clear the data band.

In arguing against Apple's proposed reallocation, UTAM asserts that "[t]he result of forcing manufacturers of voice systems and devices to use only the more heavily loaded spectrum would be to shift approximately $120-130 million in band clearing costs from data to voice products."[5] This statement illustrates the danger of allocating the 1920-1930 MHz band for voice products based upon the belief that UTAM will use dollars contributed by voice manufacturers or raised through early deployment to clear the data band.

UTAM's characterization of the current division as "Solomon-like"[6] is perhaps more appropriate than UTAM realized. Solomon did not, in fact, cut the baby in half. In Solomon's case, as here, equal treatment — giving each mother one-half of a baby — would have been neither fair nor wise. Like Solomon, the Commission should not confuse equality with equity. It should provide an allocation that is truly equitable — *i.e.*, that gives both voice and data an equal opportunity to occupy their respective bands — by allocating the 1910-1930 MHz band to asynchronous applications.

— **The Participants Echoed Apple's Concern About the Effect Adjacent Channel Receivers Will Have on Band-Clearing**

Several of the participants provided additional evidence regarding the severity of the adjacent channel interference problem. Comsearch stated that "[i]n virtually all instances, the receive filter bandwidths are as wide as a designated 20 MHz PCS channel block."[7] Motorola concluded that microwave receivers in the 1850-1990 MHz band "generally operate with a bandwidth of approximately 18 MHz," and that about ten percent of microwave links in the band operate on "offset" channels.[8] A list prepared by Comsearch of the radios used on approximately 90% of the microwave paths in the United States shows that five of

---

[5] Id. (emphasis supplied).
[6] Id. at 14.
[7] Comsearch Statement at 1.
[8] Motorola Statement at 10.

fifteen have IF filter bandwidths of between 12 and 15 MHz, and seven of fifteen have IF filter bandwidths of at least 16 MHz.[9] A Comsearch study in Atlanta indicated that adjacent channel paths constituted up to 50% of the paths required to make spectrum available.[10]

The problem of wideband adjacent channel receivers is especially severe for Data-PCS, which requires clear spectrum to operate. As discussed in Dr. Nagel's statement and in other Apple pleadings, the adjacent channel problem could, therefore, turn years of effort and millions of dollars into a virtually useless 2 MHz of clear spectrum if the existing allocation is not changed.

— **The Commission Should Not Consider UTAM's Claim that Its Members Have Spent Substantial Time and Money in Reliance upon the Allocation in the Second Report & Order**

In deciding upon the final allocation of the unlicensed band, the Commission can give no weight to UTAM's claim that its members have spent substantial amounts of money and time in reliance upon the current allocation, some or all of which might be lost were the Commission to change the current division of the unlicensed band.

- UTAM has submitted no evidence of this fact, nor has it quantified the amounts spent or how much of this investment would be lost were the Commission to modify its allocation.

- More importantly, all potential providers of unlicensed products have been on notice since the Commission adopted the current allocation that this allocation was subject to change, both due to the pendency of Apple's Emergency Petition/Petition for Reconsideration, as well as the fact that two of the three Commissioners voting on the Second Report & Order questioned the existing division.

- The Commission should not be forced to adopt a non-optimal allocation plan merely because certain vendors relied on a non-final order, despite clear evidence that it was subject to change.

---

[9] Comsearch Statement, Figure 1.

[10] Comsearch Statement at 3.

Just as broadcaster applicants, satellite system applicants, and others seeking radio licenses are prohibited from bootstrapping their way into receiving an FCC license by expending funds in advance of receiving such a license and then claiming that they will be injured if the Commission fails to grant the requested license, UTAM should not be permitted to force the Commission into a corner by claiming that its members will be harmed if the Commission grants Apple's request.

III. THE COMMISSION SHOULD NOT REDUCE THE 40 MHZ ALLOCATION FOR UNLICENSED PCS OR MOVE THE UNLICENSED PCS BAND TO HIGHER FREQUENCIES.

All of the participants that spoke to the issue agreed that the Commission should not reduce the 40 MHz allocation for unlicensed PCS, and most agreed that the Commission should not relocate the unlicensed band to higher frequencies. 40 MHz is the minimum amount of spectrum that will permit the operation of the many kinds of unlicensed devices that are envisioned.

Moreover, as participants at the hearings made clear, moving the unlicensed band to higher frequencies would threaten the development of unlicensed PCS by dramatically increasing the number of microwave stations that would have to be moved,[11] creating technical problems and increasing manufacturing costs,[12] forcing the re-design of products that have been engineered to operate in the currently allocated bands,[13] and undermining the interoperability of licensed and unlicensed devices.[14]

IV. UTAM DOES NOT REPRESENT THE COMPUTER INDUSTRY.

UTAM claims that it represents "the full range of future providers of data and voice unlicensed PCS products."[15] This is untrue. UTAM's Board is comprised of the eight voting members of UTAM, *i.e.*, those companies that have contributed $10,000 and, therefore, have voting privileges. They are Sony, AT&T,

---

[11] E.g., UTAM Statement at 11-12; Charles Jackson Statement at 5.

[12] UTAM Statement at 13 (costs of producing higher frequency equipment are generally greater because transmitter complexity increases due to difficulty of design, reduced chip wafer yields, and a decrease in battery efficiency).

[13] E.g., UTAM Statement at 12; Jackson Statement at 5.

[14] E.g. UTAM Statement at 13-14; Jackson Statement at 5.

[15] UTAM Statement at ii.

Motorola, Rolm, Omnipoint, Northern Telecom, PCSI, and Ericsson. Without exception, these companies are potential providers of voice products and services.

The other companies that UTAM claims as "members" simply are companies that have paid a $500 fee to defray administrative costs, such as copying and mailing. They have no voting privileges of any sort. They are not allowed to attend the closed meetings of the eight companies that truly are the members of UTAM.

Moreover, even this broader group of companies does not include any computer companies. They all are either manufacturers of voice devices, potential providers of services to UTAM, incumbent microwave operators and their representatives, or microwave manufacturers.[16] Other than NCR, a subsidiary of AT&T, not a single computer company is a member of UTAM.[17]

V. UTAM IS FOCUSED EXCLUSIVELY ON EARLY DEPLOYMENT, TO THE DETRIMENT OF BAND CLEARING.

True to the interests of its eight member companies, UTAM's Statement pays only lip service to its obligation to clear, as quickly as possible, the unlicensed asynchronous band. Behind its words lies the unmistakable fact that UTAM is focused entirely on early deployment, not on band clearing.

For example, UTAM's Statement asks, "What is the current status of UTAM's efforts to expedite the deployment of nomadic data unlicensed PCS products?"[18] Its answer is, in effect, "on hold." This section does not list a single thing UTAM has done to date to expedite nomadic deployment. Instead, UTAM complains that Apple has not yet provided UTAM with seed money, and says that the timeframe for band clearing is entirely dependent on the success of early deployment.[19] Elsewhere, UTAM faults Apple for not having shared with it or the

---

16 See UTAM Statement, Attachment 1.

17 To the best of Apple's knowledge, representatives of NCR have not directly participated in UTAM. Rather, the only AT&T participants in UTAM have been those associated with AT&T's wireless PBX business.

18 UTAM Statement at 17.

19 Id. at 18.

FCC a workable band clearing plan,[20] despite the fact that it is UTAM, not Apple, that has been charged with — and claims to have accepted — this responsibility.

UTAM's focus is also clear when one compares its statement of what it is charged with doing with its description of what it is actually doing. The Table of Contents for UTAM's operating plan includes four basic functions: organization (including the use of outside contractors), financing, band clearing/dispute resolution, and coordination/early deployment.[21] UTAM, however, has committees actively working on only three of these four functions. The only function that is not currently being addressed is band clearing.

It should also be noted that UTAM's contract with Comsearch provides for studies that principally address the issue of coordination, not band clearing. Apple believes, too, that UTAM's market-study contract with BIS seeks only the demand projections for coordinatable devices. This belief is consistent with UTAM's Statement, which says that the demand study was requested to provide estimates of revenue sources for the financing plan,[22] and that deployment of coordinatable devices will constitute the principal, if not the only, such revenue source.[23]

The point is that the longer UTAM fails to begin planning a band clearing process, the more the deployment of nomadic devices will be delayed. In fact, the delays may be significantly increased if UTAM fails to take advantage of the "window of opportunity" that exists between now and when the Commission begins granting PCS licenses. As Comsearch and others discussed, affected industries will likely be inundated by the demand to relocate the more than 12,000 microwave paths in the PCS bands.[24]

---

20 Id. at 17.

21 Id., Attachment 2. Two of the other items (executive summary and "importance of unlicensed PCS" are essentially summaries, and the final item ("UTAM wind up and dissolution") is essentially a subset of, or follow-on to, the band clearing and financing functions.

22 Id. at 12, Attachment 2 p. 3.

23 See id. at ii (funding will come from voluntary seed money contributions and clearing fees from sales of equipment; early deployment is a "critical component of revenue raising"); id. at 8 (deployment of coordinatable products is expected to be the "principal" source of funding).

24 Comsearch Statement at 4.

UTAM should be working now to conduct studies, set priorities, obtain commitments from engineers, technicians, and others who will be needed to effect band clearing, and develop an approach that will maximize resources and minimize delay. Once PCS licenses begin to be awarded, the demand for vendors will skyrocket, and the prospects for acting quickly will plummet.

CONCLUSION

Nomadic Data-PCS epitomizes what Commissioner Quello described in his opening remarks as the "defining" feature of PCS services: "person-to-person rather than location-to-location communications ... engineered to the individual user, not to a residence, business, automobile, or other similar physical location."[25] Apple urges the Commission to remain focused on this essential aspect — "anytime, anywhere" communications between people, not fixed devices — and adopt an allocation scheme and band-clearing plan that will permit the rapid deployment of Data-PCS.

Respectfully submitted,

APPLE COMPUTER, INC.

/s/ James M. Burger

James M. Burger
Director, Government Law
APPLE COMPUTER, INC.
1550 M Street, N.W., Suite 100
Washington, D.C. 20005
(202) 872-6263

OF COUNSEL:

Henry Goldberg
GOLDBERG, GODLES, WIENER & WRIGHT
1229 Nineteenth Street, N.W.
Washington, D.C. 20036
(202) 429-4900

April 22, 1994

---

[25] Transcript of FCC's En Banc Meeting on PCS Issues, p. 14-15 (April 11, 1994).