

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

RECEIVED

SEP 15 1994

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

\_\_\_\_\_  
)  
In the Matter of: )

)  
)  
Amendment of the Commission's )  
Rules to Establish New Personal )  
Communications Services. )  
\_\_\_\_\_)

GEN Docket No. 90-314

DOCKET FILE COPY ORIGINAL

JOINT REPLY

ArrayComm, Inc. ("ArrayComm") and Spatial Communications, Inc. ("SCI"), by their attorneys, hereby submit this Joint Reply with respect to their July 25, 1994 "Petition for Further Reconsideration and Request for Clarification" in the above-captioned proceeding. In their July 25, 1994 filing, ArrayComm and SCI proposed certain revisions to the previously adopted rules governing broadband Personal Communications Services (PCS).

To briefly summarize, ArrayComm and SCI urged the Commission in their petition to adopt revised rules incorporating the concepts of peak directional radiated power and average radiated power from PCS base stations in order to facilitate the use of directional antennas. Under this approach, higher power would be permitted by concentrating a smaller amount of total radiated power toward the intended user. Adoption of the standards, fully

No. of Copies rec'd  
List ABCDE

0711

detailed in the parties' July 25, 1994 petition, will provide flexibility to PCS licensees and facilitate use of smart antenna technology by those operators who wish to do so.

ArrayComm and SCI further sought clarification of the current PCS transmitter power limits. Specifically, the parties urged the Commission to clarify that the power limits apply to individual base station transmitters without regard to the number of such transmitters employed at each base station, the antenna element or elements to which each transmitter is connected, or the channels in which each transmitter is allowed to transmit.<sup>1/</sup>

The comments filed by other parties on August 30, 1994 with respect to the ArrayComm/SCI proposals are generally supportive of those proposals.<sup>2/</sup> MCI recommends, for example, that the Commission "give careful consideration to the proposed alternative method of defining power limits described in the petition of Spatial Communications, Inc. and ArrayComm, Inc." MCI agrees with ArrayComm that the "use of sophisticated technology can result in lower average isotropic radiated power levels, a desirable goal."<sup>3/</sup>

Similarly, Motorola indicated that it "would support some clarification consistent with the themes expressed" in the

<sup>1/</sup> While the current rules require power measurements be made on every channel since compliance is on a per carrier basis, the proposed rules require only one such measurement, over the entire allocated band, to assess compliance.

<sup>2/</sup> See, e.g., MCI Comments at 5; Comments of Motorola, Inc. at 3; Comments on the Petitions for Further Reconsideration of Northern Telecom, Inc. at 6-7.

<sup>3/</sup> MCI Comments at 5.

ArrayComm petition.<sup>4/</sup> Northern Telecom also indicates that it agrees with ArrayComm's request that the Commission clarify the 100 watts per channel limitation, as "consistent with the Commission's intent and purpose in adopting rules that will accommodate advanced antenna systems."<sup>5/</sup>

ArrayComm/SCI have reviewed the comments filed by Sprint relating to their proposed rule revisions and clarifications.<sup>6/</sup> Sprint's concerns are unfounded and appear to be based on erroneous assumptions. Indeed, Sprint's comments assume incorrectly that ArrayComm's proposal is founded on a concern about competitive disadvantage. Contrary to Sprint's assertions, all directional antennas may be discouraged because of the inherent restriction on "broadcast control channel" range that is a consequence of the current rules, not just ArrayComm's. In fact, ArrayComm agrees that SDMA technology will not suffer a competitive disadvantage under the current rules. Rather, the intention was to preserve maximum flexibility for PCS system design and implementation.

Sprint also apparently misunderstands the ArrayComm/SCI concern about measurement in watts per carrier instead of watts per Hertz. As previously pointed out, the current rules favor narrowband technologies. It is axiomatic that greater power per Hertz of bandwidth (since carrier is a user-defined unit) allows substantially larger information carrying capacity to smaller

<sup>4/</sup> Motorola Comments at 3.

<sup>5/</sup> Northern Telecom Comments at 6-7.

<sup>6/</sup> See Sprint Corporation's Opposition to Petition for Reconsideration.

bandwidth carriers. Sprint misses the point and mischaracterizes ArrayComm's arguments in this regard.

In their proposal, ArrayComm and SCI sought to provide broadband and narrowband technologies with a level playing field on which to introduce their different concepts and products. Indeed, this clarification is not a smart antenna issue whatsoever. It is simply an attempt to provide a more logical, flexible, and ultimately unbiased method for ensuring the safety of the public with respect to RF exposure, and at the same time providing operators with the flexibility they need to develop more cost effective PCS systems.

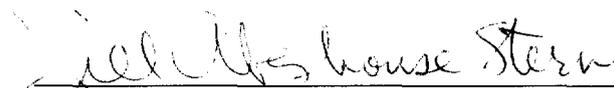
With regard to the broadcast control channel issue, channels that must be transmitted over the entire coverage area (for access purposes) require more power than a standard channel which is directionally transmitted. Allowing power that is "saved" in the directional channels to be used to increase the range of the control channel can substantially increase the coverage areas and thereby decrease the cost of PCS implementation while guaranteeing public safety. This tends to encourage the use of directional transmission over omnidirectional alternatives. ArrayComm/SCI submit that this was the original intent of the Commission. The proposed rules achieve this intended purpose and should be adopted.

For the reasons set forth herein and in their previous filings, ArrayComm/SCI urge the Commission (1) to grant further reconsideration and revise the PCS power limitations by adopting an approach that incorporates the concepts of peak directional power and average radiated power; and (2) to clarify that the

transmitter power limitation applies to individual base station transmitters in the context of multiple transmitter, multiple antenna element base stations.

Respectfully submitted,  
ARRAYCOMM, INC.  
SPATIAL COMMUNICATIONS, INC.

By:



Jill Abeshouse Stern  
SHAW, PITTMAN, POTTS & TROWBRIDGE  
2300 N Street, N.W.  
Washington, D.C. 20037  
(202) 663-8380

Their Attorneys

Dated: September 14, 1994

CERTIFICATE OF SERVICE

I, Kenneth E. ..., hereby certify that a copy of the foregoing was served by first-class mail, postage prepaid, this 14 day of September 1994, on the following persons:

\* Richard Engelman  
Office of Engineering and Technology  
Federal Communications Commission  
2025 M Street, N.W., Room 7122-B  
Washington, D.C. 20554

\* John A. Reed  
Federal Communications Commission  
OET, Rm 7122-C  
2025 M Street, N.W.  
Washington, D.C. 20554

\* Stanley P. Wiggins, Jr.  
Federal Communications Commission  
CCB, Rm 518  
1919 M Street, N.W.  
Washington, D.C. 20554

\* Rodney Small  
Federal Communications Commission  
OET, Rm 7332  
2025 M Street, N.W.  
Washington, D.C. 20554

Jay Keithley  
Leon Kestenbaum  
Kevin Gallagher  
Sprint Corporation  
1850 M Street, N.W.  
Suite 1100  
Washington, D.C. 20036  
(Counsel for Sprint Corporation)

Stephen L. Goodman  
Halprin, Temple & Goodman  
1100 New York Avenue, N.W.  
Suite 650, East Tower  
Washington, D.C. 20005  
(Counsel for Northern Telecom Inc.)

John G. Lamb, Jr.  
Northern Telecom Inc.  
2100 Lakeside Boulevard  
Richardson, Texas 75081-1599  
(Of Counsel)

Michael D. Kennedy  
Vice President and Director,  
Regulatory Relations  
Motorola, Inc.  
1350 I Street, N.W.  
Washington, D.C. 20005

Stuart E. Overby  
Manager, Regulatory Programs  
Motorola, Inc.  
1350 I Street, N.W.  
Washington, D.C. 20005

A handwritten signature in cursive script, reading "Kelly D. Everett", is written over a horizontal line.

\* Delivery by hand.