

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

To: The Commission

In the Matter of

Reallocation of the 216-220 MHz)	ET Docket No. 00-221
1390-1395 MHz, 1427-1429 MHz)	RM-9267
1429-1432 MHz, 1432-1435 MHz)	RM-9692
1670-1675 MHz, 2385-2390 MHz)	RM-9797
Government Transfer Bands)	RM-9854

REPLY COMMENTS OF ARRAYCOMM, INC.

ArrayComm, Inc. (hereinafter "ArrayComm"), is pleased to submit these Reply Comments in the above-entitled matter.

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1. ArrayComm believes that, based on the comments, the Commission has a mandate to proceed expeditiously to reallocate 1670-1675 MHz.

2. Further, of the three parties (MicroTrax, AeroAstro and ArrayComm), who expressed interest in this band, it is clear that the objectives of the Commission to promote competition and encourage the development of emerging telecommunications technologies¹ will be best served if ArrayComm's i-BURST system is allowed to offer service at 1670-1675 MHz.

3. Regrettably, it is not feasible for the band to be split or subdivided among the three parties nor is co-channel sharing practical. MicroTrax agrees with this assessment. Fortunately, however, MicroTrax has indicated that its needs (and, we assume, those of AeroAstro) can be satisfied in another portion of the spectrum.

4. ArrayComm recognized at the outset that utilization of 1670-1675 MHz for i-BURST was strongly dependent on its ability to coexist with the various United States Government (USG) stations² operating co-channel with or adjacent channel to this band. Thus, as indicated in its Comments, ArrayComm devoted substantial resources, in terms of money and manpower, to develop coordination criteria that would afford protection to the occupants of these channels. Our interaction with affected Government agencies and departments as well as non-USG parties prior to the filing of Comments has been cordial and cooperative. The absence of negative comments from them could be construed as assent. We have taken nothing for granted, however; our efforts have been ongoing and are still substantial today. We furnished copies of our Comments to them

¹ *Principles For The Reallocation Of Spectrum To Encourage The Development Of Telecommunications Technologies For The New Millennium*, FCC 99-354, paragraph 2

² To refer to these stations as USG facilities is an over-simplification. While many are, in fact, operated by agencies of the Federal Government, others are deployed by institutions, such as universities, or by state and local municipalities. Some have been specifically sanctioned by the Government and have an authorization so stating; others do not. This mélange complicates the coordination/protection process. See paragraphs 6-8, *infra*.

and have solicited by telephone and in person their reaction to our filing. We have received nothing verbally or in writing that would give concern that appropriate arrangements for i-BURST to operate at 1670-1675 MHz with USG weather operations at Fairbanks, Wallops Island, and Greenbelt on a co-channel basis and with astronomy, radiosonde and meteorological systems on adjacent channels cannot be worked out.

5. It is equally clear, however, that for sharing to be effective the cooperation of the USG, notably NTIA and the FCC, will be essential. As far as co-channel usage is concerned, NTIA had previously issued a report ordering all Government operations, except for the three co-channel sites specified above, to vacate the 1670-1675 MHz band. As necessary, NTIA should assure compliance, well before any auction of this band.

6. As indicated in footnote 2, supra, the status of operations above and below 1670-1675 MHz is somewhat chaotic and needs clarification. There seems to be no specific source or list to identify existing facilities. The situation is further complicated because, in addition to some facilities having not been licensed, others have changed location without a recognized discernible procedure being followed.

7. ArrayComm or any other would-be commercial operator at 1670-1675 MHz needs substantially better specificity. We need to know who is operating and where; we need to know what degree of protection a given facility needs. The i-BURST system will be carefully engineered to serve its customers AND to provide needed protection to adjacent channel and co-channel services. We cannot protect a facility whose existence was and is unknown nor should we be required to protect all facilities equally. This information is needed WELL BEFORE the date on which auction bids will be submitted.

8. ArrayComm recognizes that even with well-established, well-recognized services, there will be changes. Some will relocate sites; others will add sites. Realistically, new entities will emerge. ArrayComm is prepared to cope with these new circumstances. It is clear, however, that they raise potential coordination problems that will require special procedures. In general, a commercial operator at 1670-1675 MHz should have advance notice of any system proposing to come into an area and thereby

introducing a new encumbrance. A year's notice would provide a commercial operator an adequate opportunity to assess what protection is needed and how best to provide it. Six months would be an absolute minimum. For its part, the USG should encourage, if not require, as many radiosonde operations as possible to move to the 401-406 MHz band. Such action would help to alleviate the problem. As a matter of common sense, ArrayComm expects to be a good spectrum neighbor and recognizes that this requires diligence and effort; it expects reciprocal cooperation from the USG.

9. In the interest of establishing well-defined and verifiable coordination procedures, ArrayComm is proposing specific interference protection and coordination rules (see Appendix 1: Part XX – Portable Broadband Services, Section XX.19). The protection criteria are those of our initial Comments³. The degree of protection proposed exceeds that contained in the Commission's Rules and is in accord with the commitments made to various USG Agencies and Departments during the last several months to protect their facilities. However, we propose to extend, as a benchmark, this protection to only a specific set of facilities.

Specifically, ArrayComm would protect the following to the full extent set forth in Section XX.19:

A. Meteorological Satellite Earth Stations

- USG sites at Fairbanks, Alaska; Wallops Island, Virginia; and Greenbelt, Maryland.

³ During discussions on 4 and 5 April, 2001, NOAA requested that the protection criteria for meteorological satellite earth stations ("Metsat"s) be that the interference power level as measured at the receiver input be no more -150.7 dB(W/2.6 MHz) 80% of the time and no more -150.1 dB(W/2.6 MHz) 99.9% of the time. NOAA also indicated that the earth station antenna gain in the direction of terrestrial interferers would be no more than 3 dBi. The relevant portions of Section XX.19 of Appendix 1 to this document are consistent with this NOAA request. In our earlier Comments in this proceeding, we had proposed to use the Metsat protection requirements from Appendix C of the NTIA Spectrum Reallocation Final Report, NTIA Special Publication 95-32, which are slightly different. Otherwise, the protection requirements proposed here are identical to those in our earlier Comments.

B. Radio Astronomy

- Principal NSF-funded sites including the sites listed in Sections 25.213(i) and 25.213(ii) of the Commission's rules, but excluding the Ohio State site in 25.213(i) which is no longer operational; and
- the Allen Telescope site in Hat Creek, California, and NASA Goldstone;

but only those sites from the list above that actually make measurements in 1660-1670 MHz.

C. Radiosonde Receivers

- National Weather Service sites;
- Department of Defense sites in military training areas to the extent that we can determine their location.

10. Our objective is to bring some certainty to the process in a manner that, as a minimum, protects those USG installations that have been or will be identified to us as being of prime importance. ArrayComm recognizes that there may be other facilities which, arguably, merit comparable protection. We are willing to be flexible in extending protection on a case-by-case basis.

11. The uncertainties described in the preceding paragraphs necessitate the course of action proposed herein. To the extent that an accurate list of adjacent channel occupants is provided, to the extent that a process can be developed so that "new" would-be occupants (including those which want to change location) provide notice to enable ArrayComm to assess their impact on its i-BURST system, and to the extent that the appropriate Federal Agency confirms their importance, ArrayComm will support their inclusion in the appropriate Table in Section XX.19.

12. We believe that this proposal sets forth an approach that will fully protect key facilities while at the same time providing the opportunity necessary for ArrayComm to establish its i-BURST system. ArrayComm's commitment to be a good spectrum neighbor remains firm.

13. As we indicated in paragraph 9, *supra*, ArrayComm is submitting herewith as Appendix 1 proposed service rules. Some of our suggestions are quite specific, permissible power for a portable unit, for example. Others are couched in broader terms, instances in which we felt that regulatory flexibility should prevail over a rigid requirement. As the suggestions of other parties are tailored to reflect their system objectives, ours are designed for TDD and i-BURST. They do not restrict the band to i-BURST or i-BURST-like systems, however, and would be appropriate for a wide range of services.

14. We are aware that despite the fact that 1670-1675 MHz has suitable propagation characteristics for i-BURST and that the presence of USG operations can be dealt with satisfactorily, there are other contenders. We agree with them on certain issues: sharing or subdividing is not feasible; a nationwide auction is desirable. There are, however, distinct differences in the positions of MicroTrax and AeroAstro on the one hand and ArrayComm on the other hand. Perhaps, the major distinction is that ArrayComm sees no substitute spectrum in this proceeding suitable for its system, whereas MicroTrax seemingly has alternatives (see the discussion of Auctions on page 6, *infra*). We would like to highlight the more important differences.

A. On interference protection

MicroTrax's filing makes no mention of radiosonde operations above 1675 MHz. As far as radio astronomy and meteorological satellite earth stations are concerned, MicroTrax recognizes their existence but does not propose a plan that guarantees that those services' protection requirements will in fact be met. MicroTrax does propose a

general out-of-band emissions attenuation of $55 + 10 \log (P)$ where P is the in-band transmitter power.⁴ Even though this general emissions limit is more stringent than that of the Commission's PCS and WCS rules, for example, it will not result in consistent or predictable interference levels at protected sites. The MicroTrax system's portable units will apparently transmit autonomously at random locations, potentially near very sensitive USG installations. In contrast, i-BURST's areas of operation are known, rather than being random. Because i-BURST portable units adhere to a "listen before talk" regimen, the areas in which portable units will transmit can be controlled through a controlled deployment of base stations.

B. Auctions

MicroTrax contends that it should not be subject to an auction at 1670-1675 MHz because its operations are intended to protect safety of life and property. Alternatively, it argues that any such auction should be limited to "eligibles," i.e., those whose operation and purpose are identical to MicroTrax. OR as a third choice, if MicroTrax should have to compete in an auction (presumably against ArrayComm), it should be entitled to bidding credits. OR finally, if none of these alternatives is acceptable to the Commission, then seemingly MicroTrax would opt to abandon 1670-1675 MHz and seek allocation of the 1.4 GHz spectrum on an unpaired basis. MicroTrax suggests that this will meet i-BURST's needs and AeroAstro's needs as well as its own.

ArrayComm does not believe that the 1.4 GHz spectrum will yield the 5 contiguous megahertz required for i-BURST. 1429-1432 MHz has already been allocated for medical telemetry purposes, making it impossible to aggregate 5 MHz of suitable contiguous spectrum between 1427 MHz and 1435 MHz. In addition, the interference environment and spectral neighbors in 1390-1395 MHz are significantly less desirable for our application than 1670-1675 MHz.

⁴ MicroTrax Comments, Section III.A

We understand, however, that MicroTrax may be able to share 1429-1432 MHz, thereby making the 1427-1435 MHz spectrum suitable for its purposes. ArrayComm is, of course, supportive of MicroTrax's espousal of auctions on an unpaired basis. We agree with its contention that paired channel proposals burden those, such as TDD proponents, who need only one-half of the pair. Similarly, we believe that MicroTrax's innovative application of combinatorial bidding deserves consideration. Rather than using this approach to combine geographic areas, MicroTrax has a number of allocation proposals in which 1427-1435 MHz spectrum is both paired and unpaired with each segment able to be combined for auction purposes. 1670-1675 MHz does not lend itself to this approach and, thus, we could not support its utilization there. However, if its application at 1427 MHz would augment the chances of a user of unpaired spectrum prevailing at an auction, it has ArrayComm support.

MicroTrax's proposals for restrictions on the use of 1670-1675 MHz and for auction entitlements based on a few potential uses of their system are without merit, however. Carriers today and tomorrow serve and will serve customers who in turn have public safety responsibilities. ArrayComm, itself, believes that i-BURST will provide useful services to many segments of the medical community as well as public safety agencies.

To limit the auction to those whose usage conforms to that of MicroTrax not only tilts the auction in its favor unfairly, but it essentially predetermines the use to which an auction winner could put 1670-1675 MHz.

As a subsidiary of the successful Harris Corporation, MicroTrax's request for bidding credits is more than a little disingenuous. To open a Pandora's Box of bidding credits based on declarations of noble intentions (with no apparent indication of how adherence to these intentions would be enforced) would be an unwise precedent for the Commission to adopt.

C. System Objectives

MicroTrax contends that ArrayComm's i-BURST system will not provide new or innovative services requiring new spectrum but rather would be an alternative delivery mechanism for carriers' existing voice and data services.⁵

This is a misperception. i-BURST enables the delivery of portable broadband data at mass market prices. This is a new and innovative service. The delivery of broadband data to portable users with economics that permit mass market pricing is beyond the capability of cellular systems in the United States today. Based on the public record, it will also be beyond the capability of the primary 3G technologies being considered for future deployment in the United States.

And, yes, contrary to MicroTrax's assumption, 5 contiguous megahertz is adequate for i-BURST. 1670-1675 MHz, provided it is made available without undue impediments, provides a viable opportunity.

15. In summary, ArrayComm believes it has demonstrated that its i-BURST system would bring a new competitor to the marketplace, offering a system approach that is not present today in the U.S. It will provide a portable service at unequaled wireless data rates and with unmatched economics. To do this, we need nationwide service and protection requirements that are open and reasonable. Allow us to compete, not only

⁵ *ibid.*, page 11

with today's entrenched carriers but, also, for the spectrum that can make our promise a reality.