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EX PARTE OR LATE FILED

March 28, 1997

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Mr. William F. Caton
Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

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MAR 31 1997

Federal Communications Commission
Office of Secretary

Re: GN Docket No. 96-228, Notice of Ex Parte Presentation

Dear Mr. Caton:

On March 27 and March 28, Leslie Taylor and Richard Cooperman, representatives of Primosphere Limited Partnership, an applicant for a license in the satellite digital audio radio service (satellite DARS), met with Commission officials to discuss the petition for expedited reconsideration of the out-of-band emission limits adopted for the Wireless Communications Service (WCS) in the above-referenced docket.

During these meetings Primosphere's representatives urged the Commission to reject the request of DigiVox Corporation and PACS Provider Forum to adopt less stringent out-of-band emission limits on the WCS than those the Commission had found necessary to protect a number of other services, including satellite DARS, less than one month ago. In its decision adopting licensing and service rules for WCS, the Commission determined an appropriate out-of-band emission limit for WCS which was based on the record, including information provided by both WCS and satellite DARS proponents, and which found a balance between the needs of both communications services.

In particular, the Commission must consider the following:

- (1) the existing out-of-band emission limit is based on a robust record on which all parties had the opportunity to comment;
- (2) DigiVox and PACS have submitted no new information in their Petitions for Reconsideration;

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(3) the short time for reconsideration has not provided an adequate opportunity for full evaluation of how the DigiVox and PACS proposals would affect each proposed satellite DARS applicant (in fact, neither party evaluated the satellite DARS applications but rather made erroneous and broad assumptions about satellite DARS systems);

(4) the use of a statistical analysis by DigiVox and PACS in their efforts to demonstrate that interference to satellite DARS receivers would occur only at random and acceptable intervals ignores the serious impact of such interference as well as the cumulative effect of multiple PACS-type transmitters from the multiple licensees in the WCS bands;

(5) the statistical analysis assumes voice service. Future use of WCS spectrum may be data, resulting in an almost continuous duty cycle; and

(6) DigiVox and PACS assume additional margin for satellite DARS based on erroneous assumptions about satellite DARS system signal encoding, antenna design, antenna location and deployment of terrestrial repeaters.

The Commission should not reconsider its decision in this short timeframe with the wide divisions in technical submissions and conclusions. The attached Statement of Richard Cooperman illustrates how the Commission could reach an erroneous conclusion if its analysis is based on incorrect assumptions. At this point in both the satellite DARS and WCS proceedings the Commission should maintain the limits adopted in the WCS Order as well as the proviso that WCS and satellite DARS licensees work together to fashion appropriate modifications to the technical and operational rules based on actual system and equipment configurations that will be developed.

Finally, the United States has only 25 MHz for satellite DARS. The American people should soon have a choice of two providers of a new nationwide radio service offering numerous programming options with high quality audio. In contrast, personal communication service spectrum is widely available in a number of frequency bands. Providers of terrestrial wireless communications services also have a variety of means to reduce out-of-band emissions while satellite systems are severely constrained in their ability to increase operating margins through higher power.

Leslie Taylor Associates to William Caton - page 3

To preserve the promise of satellite DARS, the Commission should maintain its recently adopted out-of-band emission limits on WCS.

Respectfully submitted,



Leslie A. Taylor
Counsel
Primosphere Limited Partnership

Attachment - Technical Statement

cc: The Honorable James Quello
The Honorable Rachelle Chong
The Honorable Susan Ness
Jane Mago, Office of Commissioner Chong
Suzanne Toller, Office of Commissioner Chong
David Siddall, Office of Commissioner Ness
Rudolfo Baca, Office of Commissioner Quello
Julius Genachowski, Office of the Chairman
Steve Sharkey, International Bureau
Kimberly Baum, International Bureau
Jonathan Cohen, Wireless Telecommunications Bureau
Tom Stanley, Wireless Telecommunications Bureau

**TECHNICAL STATEMENT OF RICHARD COOPERMAN
PRIMOSPHERE LP TECHNICAL ADVISER, ON
FCC ANALYSIS OF PROPOSED REVISIONS
TO WCS OUT-OF-BAND EMISSION LIMITS**

GN DOCKET No. 96-228

In telephone conversations on March 27, 1997 and a meeting on March 28, 1997 with Commission engineering staff Primosphere was informed that:

DigiVox claims for handset duty cycle and "head" link losses were rejected;

DigiVox estimates of SDARS antenna beam shape loss and polarization loss were accepted; and

DigiVox estimates of SDARS receiver noise floor were accepted.

These decisions are now being used as a basis for staff recommendations to reduce PACS handset out-of-band emission limits from the current 110 dB to 93 dB. This recommendation would allow PACS handsets to generate interference into the SDARS band 50 times higher than the current limit.

Primosphere agrees that the duty cycle and "head" link losses taken by DigiVox should be rejected, however, we are very concerned that the staff is developing a recommendation based on DigiVox flawed engineering. These are discussed below:

1. Antenna Beam Shape and Polarization Losses

In its analysis of the SDARS link DigiVox admits to not being guided by the four SDARS system filings, filings that have been on public record for over four years. The DigiVox estimate of a 6 dB loss due to SDARS beam shape is wrong. There is no loss. The Primosphere antenna is a trunk edge whip whose beam pattern will clearly see a PACS hand held unit. Polarization loss between circular and linear polarization is theoretically 3 dB, but for whip antennas it is in the 1 to 2 dB range. For a planar array antennas, CD Radio uses a planar array antenna, the loss can be 0 dB.

Together this represents a 7 dB error in the link calculation.

2. Receiver Noise Floor

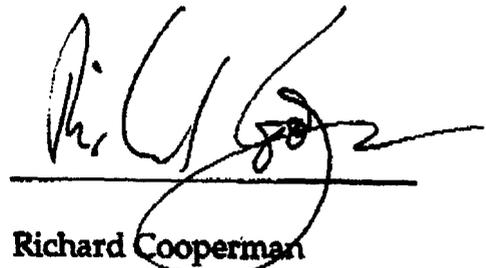
The Primosphere system is based on an SDARS receiver noise floor of -145.6 dBW/MHz and the CD Radio system is based a -148.6 dBW/MHz noise floor. This is 3 dB and 6 dB better, respectively, than the DigiVox guess as to noise floor. DigiVox provides no analysis to support its claims as to SDARS receiver

noise floor.

DigiVox was informed of these errors in January 1997 yet they persist. DigiVox has neither studied the Primosphere antenna or receiver design nor provided any analysis to back up their claims. This residual 10 to 13 dB error in the DigiVox link calculation has now been carried forward into Commission engineering staff calculations.

Commission engineering staff notes that they are considering allowing a 1 dB increase in SDARS receiver noise floor due to PACS handset at a 12 foot distance. They then note that a 93 dB out-of-band emission limit would meet that level of noise. Taking into account the above errors Primosphere calculates (see the attached table) that at a 93 out-of-band emission limit, the SDARS receiver noise floor increases by an intolerable 4 dB, not by 1 dB. The out-of-band emission limit would have to be set to 100 dB to result in a 1 dB increase in SDARS receiver noise floor.

It should be noted that the above calculation is based on an out-of-band emission from a single PACS handset. SDARS must deal with multiple PACS handsets, PACS base stations, a potential second PACS service provider, service providers in the B, C and D blocks, and other non-thermal man-made noise. A 1 dB increase from a single PACS handset will disturb SDARS transmission, a 4 dB increase from a single PACS handset will break the SDARS link.


Richard Cooperman

3/28/97

Dated

TABLE 1 REVERSE DIRECTION INTERFERENCE LINK BUDGET

PARAMETER	STAFF CALCULATION	PRIMOSPHIERE CALCULATION	PRIMOSPHIERE RECOMMENDATION	COMMENTS
Handset Out-of-Band Emission Standard	-63.0 (dBW/MHz)	-63.0	-100.0	Digicor proposes a 28 dB loosening of current limit
Handset Duty Cycle	0.0	0.0	0.0	Staff agrees there is no link loss attributable to duty cycling XMTR, SDARS data rate much higher than WDCS. Thus must use peak power not average
Distance to SDARS Receiver Antenna	4.0 (m)	4.0	4.0	HNS assumed 12' or 4 m separation
Frequency	2320.0 (MHz)	2320.0	2320.0	
Free Space Path Loss	-51.8 (dB)	-51.8	-51.8	
SDARS Antenna Gain	3.0 (dB)	3.0	3.0	Primosphere Slings
Head Loss	0.0 (dB)	0.0	0.0	Staff agrees the human head does not provide shielding over full circle.
SDARS Beams Shape loss	-6.0 (dB)	-6.0	0.0	Handset can be directly in SDARS antenna bore-sight, no loss
Polarization Loss	-3.0 (dB)	-3.0	-2.0	Theoretical circular to linear polarization decoupling is 3 dB, obtainable is only 1 - 2 dB.
Interference from Single PACS XMTR to SDARS	-160.8 (dBW/MHz)	-149.8	-160.8	PACS out-of-band emissions from a single handset is sufficient to break SDARS receive link
SDARS Receiver Noise Floor	-142.6 (dBW/MHz)	-145.6	-145.6	
Resultant Interference	-142.0 (dB)	-141.6	-144.6	Primosphere receiver noise floor is 3 dB better than Staff allocation
Margin	-0.6 (dB)	-4.0	-1.1	Staff calculation based on incorrect link assumptions