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

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FEDERAL COMMUNICATIONS COMMISSION
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In the Matter of:

Establishment of Rules and Policies for the
Digital Audio Radio Satellite Service in the
2310-2360 MHz Frequency Band

IB Docket No. 95-91 /
GEN Docket No. 90-357

Reply Comments of CD Radio

Peter K. Pitsch
Pitsch Communications
2300 N Street, N.W., Suite 600
Washington, D.C. 20037
(202) 663-9039
Of Counsel

Richard E. Wiley
Michael Yourshaw
Carl R. Frank
Bruce A. Olcott
of
WILEY, REIN & FIELDING
1776 K Street, N.W.
Washington, D.C. 20006
(202) 429-7000

Its Attorneys

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SUMMARY

After nearly a decade of work, the Commission should conclude this proceeding by adopting rules permitting satellite Digital Audio Radio Service (“satellite DARS”) licensees to operate terrestrial repeaters on an as-needed basis, so long as they are not used to originate programming and only receive input signals from, and retransmit the signals of, their operating satellites. The Commission, the satellite DARS applicants and the other commenters in this proceeding have expressed support for rules that embody these conditions. Thus, CD Radio urges the Commission to adopt the proposed rules included as an attachment to CD Radio’s initial comments in this proceeding. Alternatively, the Commission should adopt the nearly identical rules proposed by AMRC.

In adopting rules, the Commission should refrain from imposing a priori restrictions on the number of terrestrial repeaters utilized, and should not require satellite DARS operators to license individual devices. Arbitrary restrictions are unnecessary because natural market forces provide satellite DARS licensees with every incentive to construct no more terrestrial devices than is necessary to provide quality service to consumers. Additionally, as the Commission has acknowledged with respect to numerous other wireless communications services, individual licensing of terrestrial repeaters is burdensome and unnecessary so long as the devices are used within a licensee’s authorized spectrum and service area.

Finally, the Commission should disregard the delaying tactics of the self-described opponents of satellite DARS. The Commission should dismiss the claims of the National Association of Broadcasters (“NAB”) that more information is needed about the technical characteristics of terrestrial devices, particularly with respect to the potential for out-of-band

interference. Additional information is unnecessary because the Commission's rules for satellite DARS licensees already restrict out-of-band interference and are applicable fully to terrestrial devices. The Commission should also disregard the moot and politically biased arguments of the Consumer Electronics Manufacturer's Association ("CEMA"). CEMA, relying on the representations of a Canadian government agency intent on promoting Canada's L-band design for satellite DARS, incorrectly implies that satellite DARS is not technically feasible in the S-band. The Commission has previously rejected this argument and does not need to revisit it in this proceeding.

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CD Radio hereby replies to the comments filed in the above-captioned proceeding regarding terrestrial repeaters. In addition to the applicants, only a few entities filed comments in this proceeding. All of them are prior opponents of satellite Digital Audio Radio Service (“DARS”); and have self-serving reasons for seeking FCC rules that would hamper the provision of service through unduly burdensome regulatory requirements.

Consistent with the approach taken in a host of similar cases, including in terrestrial broadcasting, the Commission’s *Further Notice* recognizes that satellite DARS licensees have ample incentives to install the requisite number of terrestrial repeaters for core urban areas and tunnels. Adopting complex regulation here would unnecessarily burden both licensees and Commission staff.

CD Radio has now begun constructing its satellite system, at a cost of approximately one half billion dollars. As these spacecraft become operational, the company will install terrestrial repeaters on an as-needed basis. By contrast, the nea-sayers in the current proceeding appear to be seeking only the delay of new services or the adoption of Canadian standards and European

technology in place of systems designed and built in the United States. Accordingly, the Commission should close this proceeding with a *Report and Order* that adopts the rules for terrestrial repeaters as proposed in CD Radio's initial comments.

I. THE RECORD OVERWHELMINGLY SUPPORTS PERMITTING SATELLITE DARS LICENSEES TO OPERATE TERRESTRIAL REPEATERS ON AN AS-NEEDED BASIS.

As the Commission has already acknowledged in this proceeding, satellite DARS operators will need to utilize terrestrial repeaters to provide adequate service to U.S. consumers in urban centers and satellite-obstructed areas such as tunnels.¹ Consistent with this conclusion, none of the commenters that responded to the *Further Notice* disputed the need for terrestrial repeaters, or suggested that the Commission should not allow their use. In fact, the commenters expressed nearly unanimous support for the adoption of rules that permit the use of terrestrial repeaters so long as they only retransmit the signals of the operating satellites,² receive input signals solely from the satellite DARS satellites,³ and are not used to originate programming.⁴

¹ *Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, FCC 97-70, ¶ 37 (March 3, 1997) (Report and Order, Memorandum Opinion and Order and Further Notice of Proposed Rulemaking) ("*Satellite DARS Order*" or "*Further Notice*").

² See Comments of the National Association of Broadcasters at 5 ("NAB Comments"); see also *Satellite DARS Order*, ¶ 140 (observing that all four then satellite DARS applicants indicated in their satellite DARS comments that terrestrial repeaters would be utilized solely to retransmit the signal of operating satellites).

³ See NAB Comments at 5.

⁴ See NAB Comments at 5; Comments of Susquehanna Radio Corp. at 2 ("Susquehanna Comments"); Comments of Alabama Broadcasters Association at 4-5 ("Alabama Comments"); see also *Satellite DARS Order*, ¶ 140 (acknowledging that the commenters in the satellite DARS proceeding agree that terrestrial repeaters would not be used to originate programming).

CD Radio originally proposed rules for terrestrial repeaters that embodied these requirements. The Commission expressed support for this approach in the *Further Notice* and should move forward with the adoption of its proposed rules with the minor revisions suggested by CD Radio in its comments. Alternatively, the Commission should either adopt the essentially identical rules offered by AMRC,⁵ or utilize the language of 47 C.F.R. § 22.165 as a template for rules regulating the use of terrestrial repeaters.⁶

II. THERE IS NO VALID REASON TO IMPOSE INDIVIDUAL LICENSING REQUIREMENTS ON TERRESTRIAL REPEATERS.

As the Commission correctly concluded in its *Further Notice*, it would be burdensome to require individual licensing for terrestrial repeaters utilized by satellite DARS operators.⁷ Instead, licensees should be permitted to deploy terrestrial gap-fillers on an “as-needed basis” to meet their service requirements.⁸

In its comments, the National Association of Broadcasters (“NAB”) calls for individual licensing of repeaters, putatively so the Commission can enforce its rules.⁹ Yet the Commission has repeatedly affirmed that the blanket licensing of repeaters and similar transmitters is desirable. For example, the Commission eliminated, or expressly refrained from imposing,

⁵ See Comments of American Mobile Radio Corporation (“AMRC”) at 4 n.3.

⁶ Section 22.165 states the conditions pursuant to which licensees in the public mobile services are permitted to operate additional transmitters for existing systems.

⁷ *Further NPRM*, ¶ 142.

⁸ *Id.*

⁹ See NAB Comments at 6 (NAB also claims individual licensing is necessary in order to monitor the number of terrestrial devices utilized by licensees).

individual licensing for repeaters, boosters, and additional transmitters in the PCS, CMRS, WCS, cellular, LMDS, and fixed microwave services,¹⁰ and has proposed to eliminate individual licensing for FM booster stations.¹¹ The agency found individual licensing to be “burdensome and unnecessary” because such devices “operate on frequencies already authorized to the licensee and cannot increase the coverage area provided by the licensee’s base station, but only fill in weak or no-signal areas.”¹² This conclusion is fully applicable to satellite DARS because terrestrial repeaters will operate only within a satellite DARS licensee’s authorized spectrum and cannot be used to increase the coverage area of its space stations. The devices will function solely as a supplement to a licensee’s satellites, filling in obstructed no-signal areas.

This same rationale prompted the Commission to conclude that it is equally unnecessary for licensees in other services to disclose the *locations* of boosters within an authorized service area because “[i]n the unlikely case of interference,” licensees can check with adjacent channel users to determine if such interference is caused by the use of a transmitting device.¹³ This

¹⁰ See, e.g., 47 C.F.R. § 22.165 (public mobile radio services); 47 C.F.R. § 90.219(e) (private land mobile radio service); 47 C.F.R. § 101.151(e) (private fixed microwave service).

¹¹ See *Improving Commission Processes*, 11 FCC Rcd 14006, 14021, 14022 (1996) (Notice of Inquiry). In its comments, Susquehanna Radio not only failed to mention that the Commission has proposed to eliminate the licensing requirement for FM broadcast boosters, but it also failed to raise the equally relevant point that, under the Commission’s existing rules, no numerical limits are placed on FM booster stations and FM licensees are permitted to operate as many booster stations as they see fit. See 47 C.F.R. § 74.1232(g).

¹² *Routine Use of Signal Boosters*, 11 FCC Rcd 16621, 16631 (1996) (authorizing unlicensed use of signal boosters in the land mobile radio and paging services); see also *Public Mobile Services*, 9 FCC Rcd 6513, 6519 (1994) (authorizing the use of additional unlicensed transmitters in the cellular service).

¹³ *Routine Use of Signal Boosters*, 11 FCC Rcd at 16631.

conclusion is especially applicable to the satellite DARS service because, unlike the paging and land mobile radio services, which may have dozens of licensees in each community, only one satellite DARS licensee will be authorized for each of the two 12.5 MHz spectrum blocks throughout the United States.

Finally, this same logic defeats any claim that the Commission needs additional technical information before adopting rules for terrestrial repeaters. NAB would have the Commission collect a shopping list of data, most of which relates to the potential for out-of-band interference.¹⁴ However, the Commission's rules applicable to satellite DARS licensees already limit out-of-band interference to adjacent users and these rules are fully applicable to satellite DARS terrestrial repeaters. Thus, the Commission does not need the additional technical information requested by NAB. Also, in this regard, we note that none of NAB's members is an adjacent channel user. While NAB and some terrestrial radio may wish to use this proceeding to hamper satellite DARS, the Commission has recognized that imposing regulatory restrictions on a new service for protectionist reasons raises significant legal questions.¹⁵

III. THE COMMISSION SHOULD ALLOW THE MARKET TO DETERMINE THE NUMBER OF REPEATERS AND THE TIMETABLE FOR INSTALLATION.

Despite the clear market incentives governing satellite DARS licensees, CEMA and NAB have taken extreme (and surprisingly opposite) positions in an effort to hinder deployment of the new service. NAB has urged the Commission to limit the number of terrestrial repeaters and

¹⁴ See NAB Comments at 4-5; see also Susquehanna Comments at 2; Alabama Comments at 2-3.

¹⁵ See *Satellite DARS Order*, ¶ 84 (citing *National Ass'n of Broadcasters v. FCC*, 740 F.2d 1190 (D.C. Cir. 1984)).

delay their installation,¹⁶ while CEMA has argued that operators should be forced to install large numbers of repeaters on a government-mandated timetable.¹⁷ Both of these opponents of satellite DARS are trying to disrupt the efficient launch of service to the public—NAB by hampering its quality, CEMA by increasing its cost. Neither approach is meritorious.

The Commission does not need to regulate the number of, or timetable for installation of, terrestrial repeaters because market forces will provide CD Radio with substantial incentive to implement a high-quality service using only a relatively limited number of repeaters located in difficult propagation environments, primarily in core urban areas. CD Radio has no incentive to construct superfluous terrestrial devices because to do so would unduly increase the cost of the satellite DARS system.

CD Radio also has no incentive to construct too few terrestrial devices because of the substantial competitive forces that already exist, or are being developed, in the audio programming marketplace. CD Radio will have to compete not only with terrestrial radio, but also with a second satellite DARS provider. Thus, CD Radio has every incentive to construct the requisite number of strategically placed terrestrial repeaters, the use of which will truly be supplemental to its satellite service.¹⁸

¹⁶ NAB Comments at 7.

¹⁷ CEMA Comments at 9.

¹⁸ The suggestion that terrestrial repeaters should not be permitted to retransmit the signals of satellite spot beams is yet another premature argument designed to delay deployment of satellite DARS. *See* Mt. Wilson Comments at 3-4. Neither of the satellite DARS applicants have proposed to use spot beams at this time. It is thus premature for the Commission to impose rules addressing such hypothetical situations. If a satellite DARS operator does in the future seek Commission consent to provide spot beam services, the Commission and the public will have ample opportunity at that time to consider the issue in conjunction with the application. In any

(Continued...)

The conflicting positions of satellite DARS' opponents are transparently self-serving and repetitious after seven years. Thus, the Commission should reject the arguments of NAB and CEMA and permit the market to dictate the placement of terrestrial repeaters.

IV. THE COMMISSION SHOULD DISREGARD THE BIASED AND IRRELEVANT TECHNICAL ASSERTIONS SUBMITTED BY CEMA.

Finally, the Commission should, once again, dismiss CEMA's biased and flawed attacks on the deployment of the satellite DARS service. CEMA has long fought the use of 2.3 GHz, or the S-band, for satellite DARS. Instead, CEMA yearns for an allocation for terrestrial and satellite DARS at L-band, as Canada has implemented.¹⁹

As the FCC well knows, however, the United States considered and rejected the use of the L-band for satellite DARS, noting that the band was generally unavailable because of existing U.S. Government and commercial mobile aeronautical telemetry ("MAT") use.²⁰ Earlier this year, the Commission rejected CEMA's latest attempt to derail satellite DARS. Nothing has changed, and the Commission should continue to reject CEMA's moot and untimely request.

Furthermore, the technical support proffered by CEMA is biased, erroneous and overstated. The centerpiece of CEMA's filing is a technical analysis purporting to identify flaws in satellite only coverage, thus supposedly necessitating deployment of "a significant number"

(...Continued)

case, satellite DARS repeaters should be allowed to rebroadcast any signals from an authorized satellite DARS spacecraft.

¹⁹ Canada designated the L-band for its terrestrial digital radio services and concluded that any Canadian satellite DARS operation that is developed in the future should operate in the L-band as well.

²⁰ See *Satellite DARS Order*, ¶ 38; *Allocation Order*, 10 FCC Rcd 2310, 2315 (1995).

of terrestrial gap-fillers. However, that analysis was conducted by the Ottawa-based Communications Research Centre (“CRC”), a research facility *operated by Industry Canada, a division of the Canadian government.*²¹ The CRC’s stated purpose is “to support Canadian telecommunications firms in their efforts to remain globally competitive.”²² In achieving this end, one of its express “goal[s]” is to “[i]nfluence the establishment of a world-wide standard for digital radio broadcasting.”²³ In other words, CEMA has submitted to the Commission a position paper prepared by a Canadian government agency that is working actively to convince foreign countries to reject the U.S. model for S-band satellite DARS and, instead, implement the Canadian L-band proposal. CD Radio sees no reason why the Commission should accede to these foreign interests by rejecting state-of-the-art American technology in favor of a European/Canadian standard.

Not only is the CRC analysis biased, it is also technically irrelevant. The CRC purports to analyze S-band and L-band satellite proposals and concludes that numerous terrestrial repeaters will be necessary. Yet, the paper principally reviews the planned European/Canadian system²⁴ (and concludes—as CD Radio has said all along—that it cannot work without

²¹ See Communications Research Centre, Internet Home Page, *available at* <http://www/crc.doc.ca/crc/nframe.html> (last update June 11, 1997) (describing the CRC as the “Canadian government’s leading communications research facility”).

²² *Id.*

²³ See Communications Research Centre, Internet Page, *available at* <http://www/crc.doc.ca/crc/rbroadc.html> (last update June 11, 1997).

²⁴ See *Analysis of the Technical Merits of Terrestrial Gap-Fillers Supplementing DAR Satellite Broadcasting in the L-band and S-band Frequency Range*, Communications Research Centre, at 29 (May 21, 1997), *included as Exhibit 1 to CEMA’s Comments (“CRC Study”).*

numerous gap-fillers). The CRC entirely ignores CD Radio's proposal to construct its satellite DARS system using Code Division Multiplex ("CDM") signal transmission.²⁵ The CRC study also largely ignores CD Radio's planned use of satellite spatial diversity, which substantially reduces the need for gap-fillers.

Finally, even if the CRC study were relevant and unbiased, at most it concludes that core urban areas may require coverage by terrestrial repeaters. CD Radio has long acknowledged that fact, and the instant rulemaking is designed to implement this policy.²⁶ Indeed, despite CEMA's ill-founded speculations suggesting a need for huge numbers of repeaters, the CRC study models an implementation of an S-band gap-filler plan for Toronto, Canada—a city with a population of 3.3 million containing numerous tall buildings and shadowed areas—using only nine low power repeaters.²⁷ A diversity system, as under construction by CD Radio, will require fewer terrestrial repeaters but, fundamentally, both CD Radio and the CRC appear to agree that satellite DARS can operate with but a moderate number of repeaters located in core urban areas.

²⁵ Specifically, CD Radio's proposed satellite DARS system will use CDM in a synchronous mode (S-CDM), which is technically similar to the outbound (*i.e.*, base station(s)-to-mobile) path of PCS/Cellular CDM terrestrial communication systems operating at 1.9 GHz. Considerable data are available on the successful operation of such systems including interference, soft channel handover and propagation, which support CD Radio's planned system design for its terrestrial repeaters.

²⁶ The first four parts of the CRC Study (through page 25), which contain largely correct general conclusions about the interference environment that will be faced by satellite DARS providers, offer an excellent response to NAB's plea that repeaters be forbidden or constrained.

²⁷ CRC Study at 39. CEMA misrepresents the CRC study as calling for 85 gap fillers. CEMA Comments at 5. In fact, as the CRC study makes clear, the 85-unit model is a "straw man" proposal based on omnidirectional antennae; with directional antennae, the CRC model uses only 9 repeaters. CEMA also claims that mobile reception would fail at speeds above 40 mph. This, too, is a misrepresentation. CRC analyzed a hypothetical Eureka-147 system operating at S-band with completely different characteristics than CD Radio's S-CDM system. CRC Study at 35.

V. CONCLUSION

The Commission should move forward with rules permitting satellite DARS licensees to operate terrestrial repeaters on an as-needed basis, so long as they are not used to originate programming and only receive input signals from, and retransmit the signals of, their operating satellites. In this respect, CD Radio urges the Commission to adopt the proposed rules included as an attachment to CD Radio's comments. Alternatively, the Commission should adopt the nearly identical rules proposed by AMRC, or utilize the language of 47 C.F.R. § 22.165 as a template for rules regulating the use of terrestrial repeaters in the satellite DARS service. In so doing, the Commission should reject the self-serving claims of entities that seek to delay satellite

DARS still further, either over misguided fears of competition or desires to suppress an American S-band system in favor of a Canadian/European L-band system.

Respectfully submitted,

CD Radio Inc.

By:



Richard E. Wiley
Michael Yourshaw
Carl R. Frank
Bruce A. Olcott

of

WILEY, REIN & FIELDING
1776 K Street, N.W.
Washington, D.C. 20006
(202) 429-7000

Its Attorneys

Peter K. Pitsch
Pitsch Communications
2300 N Street, N.W., Suite 600
Washington, D.C. 20037
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