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Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 15 of the Commission's	)	
Rules to permit operation of biomedical	)	ET Docket No. 95-177
telemetry devices on VHF TV channels 7-13	)	
and on UHF TV channels 14-46	)	

MEMORANDUM OPINION AND ORDER
(Proceeding Terminated)

Adopted: May 2, 2002 **Released: May 13, 2002**

By the Commission:

INTRODUCTION

1. In this proceeding, the Commission increased the power permitted for medical telemetry devices operating on certain TV broadcast channels, subject to minimum separation distances between such devices and co-channel TV broadcast operations.[1] With the instant Memorandum Opinion and Order, the Commission dismisses a petition for reconsideration filed by the Cellular Phone Taskforce (CPT) concerning the effects of radio frequency (RF) radiation on "electrosensitive" individuals, and denies a petition for partial reconsideration concerning separation distances filed by the National Association of Broadcasters (NAB).

BACKGROUND

2. Medical telemetry devices are used in hospitals to transmit patient measurement data to a nearby receiver, permitting patient mobility and improved comfort. Typical applications include heart, blood pressure and respiration monitors. The use of these devices allows increased mobility for patients early in their recovery, while they are still being monitored for adverse symptoms. With such devices, one health care worker can monitor several patients remotely, thus decreasing health care costs. Providing patients the freedom to move about in a limited area while being continually monitored also speeds patient recovery times and shortens lengths of stay.

3. Prior to the *Report and Order* in this proceeding, medical telemetry devices were permitted to operate on an unlicensed basis under Part 15 of the rules on TV channels 7-13.[2] In the *Report and Order,* the Commission permitted medical telemetry devices to operate with higher field strengths and expanded the permissible frequencies to include TV channels 14-46.[3] To prevent the higher field strengths from causing

[1] *Report and Order* in ET Docket No. 95-177, 12 FCC Rcd 17828 (1997).

[2] *See* 47 C.F.R. § 15.241.

[3] *See Report and Order, supra,* at 17832-17834. *See also* 47 C.F.R. § 15.242.

interference to television broadcast signals on the same frequencies as medical telemetry devices, the Commission established minimum separation distances between medical telemetry devices and the Grade B field strength contour of co-channel TV broadcast stations.[4] The Commission indicated that these standards should protect existing television and future advanced digital television (DTV) services and low power television (LPTV) stations from potential interference. CPT and NAB each petitioned for reconsideration of the rules adopted in the *Report and Order*.[5]

DISCUSSION

A. CPT petition

4. CPT states that the expansion of the availability of frequencies for unlicensed medical telemetry devices for use within healthcare facilities and the increase in permitted power for these devices is discriminatory because it will have the "unwanted, illegal and unconstitutional effect" of depriving "electrically sensitive" persons of access to health care.[6] It states that such persons will no longer be able to enter or receive care in healthcare facilities due to the ambient increase in RF emission levels.[7] CPT states that the increased emission levels will also adversely affect persons who are less sensitive, resulting in lengthened hospital stays, lengthened patient recovery times, increased health care costs and a decreased life expectancy of patients in hospitals.[8] Thus, the CPT requests that the Commission set aside its decision in this proceeding permitting the operation of medical telemetry transmitters on TV channels 7-46 and at higher power levels.[9]

5. Prior to the adoption of the *Report and Order* in this proceeding, the Commission addressed in another proceeding CPT's arguments that stringent standards for RF emissions should be established to protect persons who are adversely affected by exposure to low-level electromagnetic fields. More specifically, in 1996, CPT filed a petition for reconsideration in ET Docket 93-62, which adopted new guidelines and methods for evaluating the environmental effects of radio frequency (RF) radiation from FCC-

[4] The Grade B field strength contour for a TV broadcast station is 56 dBμV/m for TV channels 7-13 and 64 dBμV/m for TV channels 14-46. *See* 47 C.F.R. § 73.683(a). The separation distances we adopted require that medical telemetry transmitters be located at least 10.3 km outside of the Grade B field strength contour of a TV broadcast station operating within the band 174-216 MHz and at least 5.5 km outside of the Grade B field strength contour of a TV broadcast station operating within the band 470-668 MHz. *See* 47 C.F.R. § 15.242(d).

[5] *See* Petition for Reconsideration filed by the Cellular Phone Taskforce on November 28, 1997, and Petition for Partial Reconsideration filed by the National Association of Broadcasters on December 1, 1997.

[6] CPT petition at 1. CPT does not specify which statutory or Constitutional provisions are implicated by the Commission's decision.

[7] *Id.*

[8] CPT petition at 3.

[9] *Id.*

regulated transmitters.[10] CPT's petition in that proceeding argued that stricter RF emission limits were necessary to protect persons who are "electrosensitive." The Commission denied CPT's petition on August 25, 1997, stating that the RF safety rules adopted in that proceeding were based on the recommendations of expert organizations and federal agencies with responsibilities for health and safety, and that it was not practicable for the Commission to independently evaluate studies of biological effects, especially concerning controversial issues such as whether some persons are "electrosensitive."[11] CPT appealed the Commission's decision in ET Docket 93-62 at the same time it petitioned for reconsideration of the Commission's decision in this proceeding. The Court affirmed the Commission's decision to rely on standards formulated by expert organizations and agencies.[12] In denying a rehearing, the Court specifically concluded, in response to CPT's claims of discrimination against handicapped persons, that the American with Disabilities Act (42 U.S.C. § 12101 *et seq.*) did not apply to the Commission's decision and that arguments made under the Rehabilitation Act (29 U.S.C. § 701 *et seq.*) were without merit.[13] Because the essence of CPT's arguments here have already been addressed by the Commission in ET Docket 93-62 and the Commission's decision in that proceeding has been affirmed on appeal, we are dismissing CPT's petition for reconsideration in this proceeding. We note that, as with any decision related to the health impact of technologies regulated by the Commission, if medical opinion on the impact of these technologies changes, we will consider whether our rules should be adjusted.

B. NAB petition

6. NAB states that the separation distances adopted by the Commission in the *Report and Order* do not ensure that television broadcast signals will be adequately protected from interference from Part 15 medical telemetry transmissions.[14] It states that the criterion employed by the Commission to calculate the distances, i.e., a 45 dB desired-to-undesired (D/U) signal ratio, is less protective of television signals than the existing 50 dB D/U signal ratio established for land mobile transmissions operating under Part 90 of the rules.[15] NAB states that recent test data produced by the Advanced Television Technology Center (ATTC) shows that a D/U signal ratio of 56.99 dB is necessary to provide adequate protection to an NTSC television signal from co-channel noise.[16] Accordingly, NAB requests that the Commission establish new

[10] *See Report and Order* in ET Docket No. 93-62, *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation,* 11 FCC Rcd 15123 (1996). *See also* Petition for Reconsideration filed by the Cellular Phone Taskforce on September 3, 1996.

[11] *See Second Memorandum Opinion and Order and Notice of Proposed Rulemaking* in ET Docket No. 93-62, *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation,* 12 FCC Rcd 13494 (1997).

[12] *See Cellular Phone Taskforce v. FCC,* 205 F.3d 82, 90 (2d Cir. 2000) (quoting the Commission's decision that it would not practicable for the Commission to independently evaluate studies of biological effects, especially for controversial issues such as non-thermal effects and whether some individuals are "electrosensitive").

[13] *See Cellular Phone Taskforce v. FCC,* 217 F.3d 72 (2d Cir. 2000) (denying petition for rehearing).

[14] NAB petition at 2.

[15] *Id. See also* 47 C.F.R. § 90.309.

[16] *See Results of RF Mask Test,* Advanced Television Technology Center, June 13, 1996 ("ATTC Report"), attached as Appendix A to the NAB petition.

separation distances from medical telemetry transmitters to TV grade B contours based on a 57 dB D/U signal ratio.[17]

7. We find that the 45 dB D/U signal ratio we selected to determine the required separation distances between medical telemetry transmitters and TV grade B contours is appropriate. This ratio was originally adopted by the Commission in 1952 to protect TV stations from interference from co-channel TV stations at the Grade B contour.[18] It is specified in Part 74 of the Commission rules to protect analog TV signals from co-channel interference from low power TV, TV translator or TV booster stations.[19] This ratio provides greater protection than the 34 dB ratio specified in Part 73 to protect analog TV signals from interference from digital TV signals.[20] As NAB noted, Part 90 specifies a more stringent D/U ratio of 50 dB to protect TV signals from interference on channels shared with land mobile operations in the 470-512 MHz band.[21] However, in establishing Part 90 service rules for the 700 MHz land-mobile band, the Commission specifically considered our experience with the 50 dB D/U ratio earlier established in the 470-512 MHz band, and determined that a 40 dB D/U ratio would be more appropriate to protect TV signals from interference from land-mobile interference.[22] In adopting this less stringent ratio, the Commission noted that the appropriate value of D/U ratio is based on a number of factors, including the definition of acceptable picture quality, TV receiver susceptibility, antenna characteristics and the aggregate interference caused by multiple signals.[23] The Commission stated that because certain technical characteristics such as picture quality are subjective and others such as TV receiver susceptibility vary widely, it is difficult for parties to agree on an appropriate D/U value that will provide sufficient protection for TV reception without being overly protective.[24]

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[17] NAB petition at 3.

[18] *Television Broadcast Service, Sixth Report and Order*, 41 FCC 148 (1952). Subsequent tests showed that 70 percent of viewers found that TV picture quality was acceptable or better at a 45 dB D/U ratio. *See* Engineering Aspects of Television Allocation, Report of the Television Allocation Study Organization, March 16, 1959.

[19] *See* 47 C.F.R. § 74.705(d). Analog TV signals are more susceptible to interference than digital TV signals, so they represent the "worst case" in determining the appropriate D/U signal ratio.

[20] *See* 47 C.F.R. § 73.623(c). As noted above, analog TV signals represent the "worst case".

[21] *See* 47 C.F.R. §§ 90.307 and 90.309. The D/U protection ratio specified in these sections is 50 dB, except on TV Channel 15 in New York, NY and Cleveland, OH, and on TV Channel 16 in Detroit, MI where the ratio is 40 dB.

[22] *See First Report and Order and Third Notice of Proposed Rulemaking* in WT Docket No. 96-86, *The Development of Operational, Technical and Spectrum Requirements For Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010*, 14 FCC Rcd 152, 221 (1999). NAB participated in this proceeding.

[23] *Id.* at 218.

[24] *Id.*

8. The ATTC test report submitted by NAB defines interference to a TV picture as occurring at the threshold of visibility (TOV), which is an extremely conservative standard for acceptable picture quality.[25] The Commission has not used this definition for determining the appropriate D/U ratios in other parts of the rules. For example, the D/U ratios in Part 73 of the rules for protecting TV stations from interference from other TV stations were determined using CCIR Grade 3 as the definition of acceptable picture quality.[26] Because the human eye is very sensitive and can discern extremely low levels of interference that would generally not be considered objectionable to the viewer, TOV is a much stricter standard for picture quality than CCIR Grade 3. Using the TOV standard for acceptable picture quality results in the determination of D/U ratios that are substantially higher than those determined using the CCIR Grade 3 standard. In addition, a TOV standard is not an appropriate level of protection at the TV grade B contour because some visible degradation of the TV signal normally is already present, which would make it difficult to discern interference at the TOV caused by an undesired signal.[27] For these reasons, we find that the D/U ratios recommended by NAB are overly protective and thus affirm our decision to base the separation rules on a 45 dB D/U ratio.

9. While we find that the rules we adopted are adequate to prevent interference, we also note that recent Commission actions will serve to reduce the number of medical telemetry users in the TV bands. Subsequent to this proceeding, the Commission allocated three new frequency bands where medical telemetry can operate on a primary basis.[28] In allocating these bands, our goal was not only to provide spectrum where medical telemetry can operate without interference, but also to encourage medical telemetry users to migrate out of the current bands.[29] To accomplish this transition, the Commission will cease approving medical telemetry equipment that can operate in the TV bands starting October 16, 2002.[30] While there is no cutoff on the marketing and use of medical telemetry equipment approved prior to that date, we expect that the use of medical telemetry equipment in the TV bands will gradually cease as equipment that operates in the newly allocated bands is deployed to replace older equipment.

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[25] *See* ATTC Report at 1.

[26] *See* 47 C.F.R. § 73.623(c)(2). *See also Final Technical Report,* prepared by the Technical Subgroup of the FCC Advisory Committee on Advanced Television Service, October 30, 1995, available at http://www.atsc.org/papers/a_cats/acats.html. The CCIR grading scale is contained in Section 4.4 of Recommendation ITU-R BT.500-10. It is a five-grade scale of picture impairment on which grade 3 is defined as "slightly annoying".

[27] The Grade B contour of a television station indicates only the approximate extent of coverage over average terrain in the absence of interference from other television stations. Under actual conditions, the true coverage may vary greatly because the terrain in some directions from the transmitter may be different from the average terrain used to predict the Grade B contour. Also, the actual extent of service may be less than predicted due to interference from other television stations. *See* 47 C.F.R. § 73.683.

[28] The three bands are 608-614 MHz, 1395-1400 MHz and 1429-1432 MHz. *See In the Matter of Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service, Report and Order,* ET Docket No. 99-255, FCC 00-211, 15 FCC Rcd 11206 (2000).

[29] *Id.* at 11225.

[30] *See* 47 C.F.R. § 15.37(i). One of the bands allocated to medical telemetry corresponds to TV channel 37 (608-614 MHz), but that channel is not used for TV broadcasts in the United States.

ORDERING CLAUSES

10. Accordingly, IT IS ORDERED that pursuant to the authority contained in Sections 4(i), 301, 302, 303(e), 303(f), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 301, 302, 303(e), 303(f), and 303(r), the Petition for Reconsideration filed by the Cellular Phone Taskforce IS DISMISSED.

11. IT IS FURTHER ORDERED that pursuant to the authority contained in Sections 4(i), 301, 302, 303(e), 303(f), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 301, 302, 303(e), 303(f), and 303(r), the Petition for Partial Reconsideration filed by the National Association of Broadcasters IS DENIED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch

Marlene H. Dortch
Secretary