for paging and radiotelephone service.[92] Under this rule, the number of additional channels assigned to BETRS in the Rural Radiotelephone Service will be determined on a case-by-case basis, taking into account all relevant factors, including the grade of service required, the equipment utilized, the amount and type of service for which demand is projected, the clustering of the customer locations, the terrain, and the potential for interference between systems. In addition, BETRS applicants will be required to demonstrate that ample spectrum would remain, after grant of their application, to meet present and projected future demand for mobile service in the area involved. We also are adding rules governing the technical characteristics of BETRS equipment as suggested by the commenters.[93] We believe that these new rules will permit us to assign an adequate number of channels for BETRS in rural areas while, at the same time, ensuring that sufficient 454 MHz public mobile spectrum remains available to meet present and future mobile service needs.

Cellular Electronic Serial Numbers

54. **Proposal.** We proposed in the Notice a new rule (Section 22.919) intended to help reduce the fraudulent use of cellular equipment caused by tampering with the unique Electronic Serial Numbers (ESN) that identify mobile equipment to cellular systems. The purposes of the ESN in a cellular telephone are similar to the Vehicle Identification Numbers in automobiles. That is, it uniquely identifies the equipment in order to assist in recovery if it is stolen. More importantly, in the case of cellular telephones, the ESN enables the carriers to bill properly for calls made from the telephone. Any alteration of the ESN renders it useless for this purpose. The proposed rule explicitly establishes anti-fraud design specifications that require, among other things, that the ESN must be programmed into the equipment at the factory and must not be alterable, removable, or in any way able to be manipulated in the field. In addition, the proposed rules require that the ESN component be permanently attached to a main circuit board of the mobile transmitter and that the integrity of the unit's operating software not be alterable.

55. **Comments.** The commenters generally support our proposal,[94] but they suggest some modifications. For example, BellSouth, Southwestern Bell, GTE, and CTIA suggest that our proposal should be modified to provide that equipment already manufactured, is exempt from the rule.[95] They argue that subjecting existing phones to this rule would be very expensive and difficult, if not impossible, to implement. Therefore, they recommend that the rule apply only

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92 See discussion of new § 22.719 in Appendix A.

93 See discussion of new §§ 22.567 and 22.759 in Appendix A.

94 See, e.g., PacTel Comments at 2; CTIA Comments at 7-8.

95 BellSouth Comments at Appendix 2, p.36; Southwestern Bell Comments at 28-29; GTE Comments at 30; CTIA Comments at 8.

to phones manufactured after a particular date.[96] NYNEX recommends that we not require the ESN chip to be secured to the main circuit board of the mobile transmitter as proposed. Rather, NYNEX suggests that the ESN chip be attached to the frame of the radio and attached to the logic board by cable.[97] In addition, it recommends that operating software be encoded or scattered over different memory chips.[98] Motorola, Inc. (Motorola) and Ericsson Corp. (Ericsson), two manufacturers of cellular mobile equipment, suggest that the proposal be modified to allow authorized service centers or representatives to make necessary and required changes to ESNs in mobile and portable units in the field.[99]

56. Southwestern Bell recommends that the rule also apply to mobile equipment associated with a wireless private branch exchange (PBX).[100] CTIA suggests that the proposal be modified in several respects. First, it states that we should clarify that requiring a mobile transmitter to have a "unique" ESN, means that any particular ESN will not exist in more than one mobile unit. Second, CTIA suggests that ESN manipulation not be permitted "outside a manufacturer's authorized facility." Third, it requests that cellular mobile units be required to be designed to comply with the "applicable industry standard for authentication."[101] New Vector supports the proposed rule, but emphasizes that the ESN criteria should be incorporated into the type-acceptance rules to clarify that manufacturers will be subject to the Commission's enforcement procedures if they do not comply with the ESN requirements.[102]

57. C2+ Technology (C2+) requests that we allow companies to market ancillary cellular equipment that emulates ESNs for the purpose of allowing more than one cellular phone to have the same telephone number. It argues that emulating ESNs in the way it describes benefits the public, does not involve fraud, and retains the security and integrity of the cellular phones.[103] In opposition, Ericsson asserts that the rules should include procedures to ensure that ESNs are not

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96 For example, BellSouth suggests that the anti-fraud measures should not apply to equipment type-accepted before January 1, 1993.

97 NYNEX Comments at 8.

98 Id. at 8-9.

99 Ericsson Reply Comments at 2-5; Motorola Reply Comments at 3.

100 Southwestern Bell Comments at 29.

101 CTIA Comments at 8.

102 New Vector Comments at Appendix I, p.44.

103 C2+ Comments at 1-2.

easily transferable through the use of an encrypted data transfer device.[104] Similarly, New Par suggests that the proposed rule proscribe activity that does not physically alter the chip yet affects the radiated ESN by translating the ESN signal that the mobile unit transmits.[105]

58. **Discussion.** The record before us demonstrates the need for measures that will help reduce the fraudulent use of cellular equipment caused by tampering with the ESN. We therefore adopt the proposed rule for the reasons set forth below.

59. Contrary to the suggestion of one commenter, the ESN rule will not prevent a consumer from having two cellular telephones with the same telephone number. Changing the ESN emitted by a cellular telephone to be the same as that emitted by another cellular telephone does not create an "extension" cellular telephone. Rather, it merely makes it impossible for the cellular system to distinguish between the two telephones. We note that Commission rules do not prohibit assignment of the same telephone number to two or more cellular telephones.[106] It is technically possible to have the same telephone number for two or more cellular telephones, each having a unique ESN.[107] If a cellular carrier wishes to provide this service, it may. In this connection, we will not require that use of cellular telephones comply with an industry authentication procedure as requested by CTIA, as this could have the unintended effect of precluding multiple cellular telephones (each with a unique ESN) from having the same telephone number.

60. Further, we conclude that the practice of altering cellular phones to "emulate" ESNs without receiving the permission of the relevant cellular licensee should not be allowed because (1) simultaneous use of cellular telephones fraudulently emitting the same ESN without the licensee's permission could cause problems in some cellular systems such as erroneous tracking or billing; (2) fraudulent use of such phones without the licensee's permission could deprive cellular carriers of monthly per telephone revenues to which they are entitled; and (3) such altered phones not authorized by the carrier, would therefore not fall within the licensee's blanket license, and thus would be unlicensed transmitters in violation of Section 301 of the Act. Therefore, we agree with New Par and Ericsson that the ESN rule should proscribe activity that

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104 Ericsson Reply Comments at 3-4.

105 New Par Comments at 21-22.

106 The telephone number is referred to in the cellular compatibility specification as the Mobile Identification Number or "MIN".

107 It is not technically necessary to have the same ESN in order to have the same telephone number. Nevertheless, the authentication software used by some cellular systems does not permit two cellular telephones with the same telephone number. In such cases, cellular carriers should explain to consumers who request this service that their system is not yet capable of providing it.

does not physically alter the ESN, but affects the radiated ESN, including activities that transfer ESNs through the use of an encrypted data transfer device.

61. With respect to the proposal to allow alteration of ESNs by manufacturers' authorized service centers or representatives, we note that computer software to change ESNs, which is intended to be used only by authorized service personnel, might become available to unauthorized persons through privately operated computer "bulletin boards". We have no knowledge that it is now possible to prevent unauthorized use of such software for fraudulent purposes. Accordingly, we decline to make the exception requested by Motorola and Ericsson.

62. We further agree with the commenters that it would be impractical to apply the new rule to existing equipment. Accordingly, we are not requiring that cellular equipment that is currently in use or has received a grant of type-acceptance be modified or retrofitted to comply with the requirements of this rule. Thus, the ESN rule will apply only to cellular equipment for which initial type-acceptance is sought after the date that our rules become effective. Nevertheless, with regard to existing equipment, we conclude that cellular telephones with altered ESNs do not comply with the cellular system compatibility specification[108] and thus may not be considered authorized equipment under the original type acceptance. Accordingly, a consumer's knowing use of such altered equipment would violate our rules. We further believe that any individual or company that knowingly alters cellular telephones to cause them to transmit an ESN other than the one originally installed by the manufacturer is aiding in the violation of our rules. Thus, we advise all cellular licensees and subscribers that the use of the C2+ altered cellular telephones constitutes a violation of the Act and our rules.

63. With respect to NYNEX's proposed modifications for securing the ESN chip to the mobile transmitter, the record does not convince us that these modifications will make the ESN rule more effective. Therefore, we do not adopt NYNEX's proposal. We agree with Southwestern Bell that the ESN rule should apply to mobile equipment associated with wireless PBX if the equipment can also be used on cellular systems. We also clarify that the new ESN rule prohibits the installation of an ESN in more than one mobile transmitter. Finally, as suggested by New Vector, we amend the type-acceptance rule to refer to the newly adopted ESN rule.[109]

Use of Part 22 Transmitters in Non-Common Carrier Services

64. **Proposal.** Section 22.119 of the Rules currently prohibits the concurrent licensing and use of transmitters authorized to provide common carrier service under Part 22 of the Rules

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108 See old § 22.915, which becomes new § 22.933 in Appendices A and B.

109 See discussion of new § 22.377 in Appendix A.

FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

June 21, 1994

In Reply Refer To:
1600D-SLM
9402642

Honorable Jim Sasser
United States Senator
363 Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Sasser:

This is in response to your letter of June 3, 1994 requesting that we respond to a concern raised by your constituent Mr. Thomas Burke. Mr. Burke desired to have the same telephone number for each of his cellular telephones. This often involves changing the Electronic Serial Number (ESN) in a cellular telephone.

The ESN is a unique number programmed into each cellular telephone at the time it is manufactured. The ESN uniquely identifies a mobile telephone to a cellular system. ESNs are used for billing and other purposes. Alteration of an ESN can interfere with a cellular carrier's effort to bill and collect for the use of its facilities. There is evidence suggesting that mobile phones with modified or cloned ESNs are used in a majority of cases involving cellular fraud.

In the Commission's Public Notice of October 2, 1991, Report No. CL-92-3, the Commission stated its general position that "phones with altered ESNs do not comply with the Commission's rules...." The Commission also stated that "any individual or company operating such phones or performing such alterations is in violation of Section 22.915 of the Commission's rules and could be subject to appropriate enforcement action." Section 22.915, Cellular System Compatibility Specifications, generally sets forth the standards of cellular operation as reflected in the Cellular System Mobile Station-Land Station Compatibility Specification (April 1981 ed.), Appendix D to the Report and Order in CC Docket No. 79-318, 86 FCC 2d 469, 567 (1981).

If you have any additional questions, please do not hesitate to contact Steve Markendorff of my staff at 202-653-5560.

Sincerely,

John Cimko
Chief, Mobile Services Division
Common Carrier Bureau

FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

January 15, 1993

In Reply Refer To:
1600D-JMT

Cellular Telecommunications Industry Association
1133 21st St., N.W., Third Floor
Washington, D.C. 20036

Attn: Michael Altschul

Dear Mr. Altschul:

This is in response to your letter of November 4, 1992 concerning the applicability of the FCC's rules to the NAM Emulation Programming Device (NEPD) manufactured and distributed by C Two Plus Technology. You ask for Commission concurrence that cellular phones containing Electronic Serial Numbers (ESNs) that have been modified by the NEPD (and similar devices) do not conform with Part 22 rules.

In our Public Notice of October 2, 1991, Report No. CL-92-3, we stated our general position that "phones with altered ESNs do not comply with the Commission's rules...." We also stated that "any individual or company operating such phones or performing such alterations is in violation of Section 22.915 of the Commission's rules and could be subject to appropriate enforcement action." Section 22.915, entitled Cellular system compatibility specifications, generally sets forth the standards of cellular operation as reflected in the Cellular System Mobile Station-Land Station Compatibility Specification (April 1981 ed.), Office of Engineering and Technology Bulletin No. 53. The bulletin is contained in Appendix D to the Report and Order in CC Docket No. 79-318, 86 FCC 2d 469, 567 (1981).

It is a violation of Section 22.915 of the Commission's Rules for an individual or company to alter or copy the ESN of a cellular telephone so that the telephone emulates the ESN of any other cellular telephone. Moreover, it is a violation of the Commission's Rules to operate a cellular telephone that contains an altered or copied ESN.

Sincerely,

John Cimko
Chief, Mobile Services Division
Common Carrier Bureau

CTIA®

FILE COPY

November 4, 1992

Ms. Renee Licht
Acting General Counsel
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Ms. Licht:

On October 22, 1992, CTIA and the staff of the FCC's Mobile Services Division and the Office of Engineering and Technology met to discuss the applicability of the FCC's rules to the NAM Emulation Programming Device ("NEPD") manufactured and distributed by C Two Plus Technology. At that meeting, CTIA and the Commission staff reviewed the FCC's rules, and Mr. Eric Hill, CTIA's Director of Industry Security demonstrated to the Commission staff that the NEPD alters a cellular phone's factory-set Electronic Serial Number.

As you can see from the attached letter to C Two Plus, CTIA has concluded that the alteration of a cellular phone's ESN by the C Two Plus NEPD is a clear violation of Section 22.915 of the FCC's rules. Based on our demonstration and our review of the device, CTIA seeks the FCC's written concurrence that cellular phones containing ESNs that have been modified by the NEPD (and similar devices) do not conform to the Part 22 Rules.

Given the importance of this matter to the cellular industry's ability to combat fraud, I urge you to act promptly to enforce Section 22.915 of the FCC's rules for cellular service.

Sincerely,

Michael Altschul

Michael Altschul

Vice President and
General Counsel

Enclosures

cc: CTIA Fraud Task Force Funding Carriers
Mr. Julius Knapp, Authorization and Evaluation Division, FCC
Mr. John Cimko, Chief, Mobile Services Division, FCC

Cellular Telecommunications Industry Association
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COMMON CARRIER PUBLIC MOBILE SERVICES INFORMATION

CHANGING ELECTRONIC SERIAL NUMBERS ON CELLULAR PHONES IS A VIOLATION OF THE COMMISSION'S RULES

Report No. CL-92-3 October 2, 1991

It has come to the attention of the Mobile Services Division that individuals and companies may be altering the Electronic Serial Number (ESN) on cellular phones. Paragraph 2.3.2 in OST Bulletin No. 53 (Cellular System Mobile Station - Land Station Compatibility Specification, July 1983) states that "[a]ttempts to change the serial number circuitry should render the mobile station inoperative." The 1981 edition of these compatibility specifications (which contains the same wording) was included as Appendix D in CC Docket 79-318 and is incorporated into Section 22.915 of the Commission's rules.

Phones with altered ESNs do not comply with the Commission's rules and any individual or company operating such phones or performing such alterations is in violation of Section 22.915 of the Commission's rules and could be subject to appropriate enforcement action.

Questions concerning this Public Notice should be addressed to Steve Markendorff at 202-653-5560 or Andrew Nachby at 202-632-6450.

- FCC -