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Ad Hoc Alliance for Public Access to 911

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July 11, 1997

FCC MAIL ROOM

John Cimko
Wireless Division
Federal Communications Commission
2025 M Street, NW
Room 5002A
Washington, DC 20554

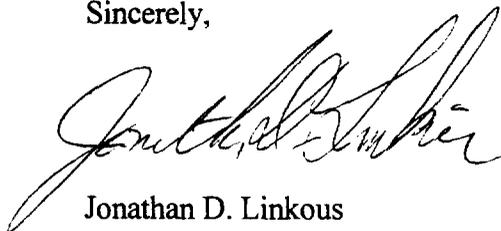
re: CC Docket 94-102
Ex Parte Communication

Dear John :

Thank you for sharing the questionnaire with me regarding technical aspects of implementing the 911 rulemaking. I understand that this will be used by the Wireless E911 Coalition to help the Commission better understand some of the technical aspects of the 911 issues.

After reviewing the questions, we have decided to provide you with our own responses. These are enclosed. Please call me with any questions or if you need any clarification on our responses.

Sincerely,



Jonathan D. Linkous

cc: William Caton, Secretary

Office of Consumer and
Competition Policy

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AD HOC ALLIANCE FOR PUBLIC ACCESS TO 911
REPLY TO
QUESTIONS ON E911 IMPLEMENTATION
FROM THE POLICY DIVISION OF
THE FCC WIRELESS TELECOMMUNICATIONS BUREAU

July 11, 1997

The Wireless Telecommunications Bureau questionnaire, dated June 13, 1997, seeks clarification of certain technical matters because “[s]ome of the petitions seeking reconsideration, and *ex parte* presentations regarding the E911 Report and Order (FCC 96-264)(called ‘Order’) raises issues touching on the technical feasibility of the schedule and other aspects of the Order.” The Ad Hoc Alliance for Public Access to 911 (“Alliance”) appreciates the opportunity to respond to these questions and submits the following reply:

The Questionnaire invites the respondent to “provide additional information helpful to understanding the technical aspects of wireless E911.” The Alliance suggests that some of the questions can be answered by reference to the FCC type acceptance standards for handsets. All handset manufacturers must manufacture their equipment to meet these standards. The FCC standards incorporate the appropriate EIA/TIA industry standards by reference. These standards ensure that all of the cellular equipment being sold in the United States will operate in a known and predictable fashion. They clearly define all of the critical operating criteria for handsets and land stations. None of the critical operating criteria is “optional.” For analog cellular the standard is EIA/TIA 553; for TDMA cellular the standard is IS136; for CDMA cellular the standard is IS95.

Question 1. What are the relevant technologies, services, and switch vendors., *e.g.*

Technology	Service	Vendor
AMPS/TDMA	Analog, digital cellular	Ericsson, Lucent, Motorola, Nokia
CDMA	Digital cellular; PCS	Lucent, Motorola, Nortel, Qualcomm
GSM	European digital standard for PCS	Ericsson, Hughes, Motorola, Nortel
iDEN	ESMR	Motorola
Other	(Specify)	(Specify)

Answer to Question 1. The above matrix appears to present a comprehensive listing of current options available to the public for commercial wireless service at the present time.

Question 2. For each of these technologies, what codes are programmed into the handset and transmitted to the cell site or switch --

Answer: For AMPS, TDMA & CDMA, the *Mobile Identity Number* (“MIN”) and *Electronic Serial Number* (“ESN”) are transmitted from the handset to the cell switch during call initiation.

By manufacturer

Answer: The manufacturer programs the unalterable, unique ESN which forever identifies that particular handset. Usually, the *Number Assignment Module* (NAM) is not programmed by the entry of the MIN and the *System Identity Code* (SID), by the manufacturer.

By dealer

Answer: The dealer usually programs the MIN and the SID. Today, the MIN is supplied by the cell carrier however, the MIN will become independent of the carrier as wireless number portability becomes a reality.

By carrier

Answer: The carrier can also program the MIN and the SID.

Question 3. What is the source of these codes --

North American Number Plan

Answer: The North American Numbering Plan supplies dialable telephone numbers. These numbers are presently used in most AMPS\TDMA\CDMA handsets as MINs.

Manufacturer's serial number

Answer: The manufacturer's Electronic Serial Number (ESN) is a 32 bit, two-part code with the first part assigned by the FCC to uniquely identify a particular manufacturer and the second part is assigned by the manufacturer to uniquely identify a specific handset.

Dealer code

Answer: There is no dealer code for AMPS, TDMA, or CDMA.

Carrier code

Answer: The Carrier code is the system identity code for AMPS/TDMA/CDMA and is assigned by the FCC to uniquely identify each system by area.

Question 4. Which of these codes uniquely identifies the handset?

Answer: The ESN is the unique identifier of handsets for AMPS/TDMA/CDMA. Since this code cannot be altered, it reliably identifies each handset.

Question 5. Which of these codes can be used for callback by a PSAP --

Directly, as in the case of a NANP code

Answer: This would be a dialable, valid MIN.

Indirectly through database lookup?

Answer: Any handset can be called back by a PSAP by use of a "valid" MIN or a pseudo MIN assigned to the calling handset by the cell switch at the time the 911 call is received. As the Alliance has demonstrated in its engineering submissions, the software necessary to assign a temporary call back telephone number (pseudo MIN) to any handset is already resident in the cell switches. The cellular industry has used pseudo MINs for call backs to roaming handsets for many years. Passing this temporary local call back number to PSAPs for all 911 callers is a trivial exercise. Thus, the PSAP should be able to call back all callers to 911 -- the unauthorized roamer, handsets with invalid MINs, handsets with valid but expired MINs, authorized roamers, handsets with shadow MINs, non-dialable MINs, etc., as soon as the Order is implemented. There has been no challenge to the Alliance's engineering statements regarding the availability or use of pseudo MINs for this purpose.

Question 6. Can the wireless switch route calls to PSAPs based on whether one or more of these codes is initiated in the handset? Which ones? Does this answer differ because, e.g., of the model of the switch, software, or other factors?

Answer: The wireless switch can, of course, be programmed to use any code information to route calls. As noted above, a temporary MIN can be assigned by the cell switch to any handset based on its ESN.

Question 7. Describe the validation process for each technology. Is there more than one type of validation, e.g., for service initialization, credit worthiness, etc.?

Answer: The validation process for AMPS/TDMA/CDMA occurs when the call is initiated. The cell carrier compares the MIN/ESN from a calling/called handset against its list of paid up subscribers and paid up roamers with valid roaming agreements.

Question 8. It has been suggested to us that the wireless switch technologies generally allow only two choices in the handling of 911 calls -- either all calls are transmitted or only calls that are currently service initialized can be transmitted. This is inconsistent with the understanding of the Commission in the Order which required that code identified calls be transmitted.

- Do you consider it to be impossible, at the present time, for wireless switches to route all 911 calls from handsets that are code-identified to PSAPs? For which technologies?
- What are the technical constraints and factors that make it currently impossible to route some or all code-identified 911 calls to the PSAP?
- Is it possible to modify switch software to route code-identified calls?

Answer: "Code Identification" is defined as a Mobile Identification Number (MIN) for calls carried over the facilities of cellular or Broadband PCS systems. A Mobile Identification Number is defined as "[a] a 34-bit number that is a digital representation of the 10 digit directory telephone number assigned to a mobile station." (Section 20.3, Appendix C of the Order). A pseudo MIN is a "10 digit directory telephone number assigned to a mobile station by the cell switch." There is nothing in the Order or the Rules which say that the MIN must be preassigned to the mobile station and resident in the handset. The current cell switch technology is designed to permit the assignment of a temporary MIN to a handset by the cell switch at the time the 911 call is placed. This technology also permits the transmission of such a temporary telephone number to the PSAP. Thus, all 911 calls can be easily code identified to PSAPs with call-back capability, as contemplated by the Order, today!

Question 9. It has also been suggested that if only service initialized calls are routed to PSAPs, the calls must be validated for some technologies, e.g., AMPS and CDMA.

- Is this correct?

Answer: Yes.

- Where calls must be validated, what does this mean? For example, if a caller is a roamer without a roaming agreement, would the validation process delay the call? Would the caller be required to provide a credit card number or other information?

Answer: When a call must be validated that call will not be connected unless the calling party's MIN/ESN is on the cell carrier's list of paid up subscribers. A roamer without a roaming agreement would not be on this list and his call would either be diverted to an operator or a recording or simply not answered. When an operator is reached, credit card information is usually requested. (There is an understandable reluctance to provide such information over the airwaves.) The Alliance is informed and believes that even if the operator is informed that the call is to 911, that call will be blocked until the credit card information is given and validated. In some situations, the call is diverted to a recording which instructs the caller to hang up and call the carrier's customer service number to establish credit with that carrier. (Which, of course, takes time.) The irony is that when credit is established, the calling party may then call 911 free of charge.

Question 10. If a switch is set to transmit all 911 calls to PSAPs, can it also transmit --

7 digit ANI

10 digit ANI

10 digit ANI and 10 digit pseudo ANI

Answer: Yes. Some PSAPs are limited in the use of ANI by their equipment. This presents a problem when a

roamer, for example, presents 10 digit ANI which contains his home area code. In this example, the PSAP with a 7-digit display would not be able to read the complete roamer number. The solution here is to deliver a 7-digit local number, the temporary pseudo MIN, to the PSAP.

Question 11. Can the switch selectively route calls differently to different PSAPs, *e.g.*, all calls to some PSAPs and only service initialized calls to others? Does this capability vary depending on the model of switch? The software?

Answer: Such routing capability is not within the current switch software for AMPS/TDMA/CDMA. The software could be modified to provide this feature but it does not seem that the expense is justified in view of the current switch capacity to provide temporary pseudo MINs for call back by all PSAPs.

Question 12. Do you believe more time will be needed to successfully implement --

Basic 911 Requirements (Currently scheduled for October 1, 1997)

Answer: No

E911 Phase I (Currently scheduled for April 1, 1998)

Answer: No. The FCC provided more than sufficient time in the Order for compliance. More time is not justified.

Question 13. In the Order, the Commission recognized that when non-code identified calls are transmitted to a PSAP, the PSAP may not receive ANI information allowing call back for such calls. It has recently been suggested that if a carrier transmits all 911 calls, including those not code identified, the carrier may be unable to transmit ANI for other calls. In other words, transmission of non-code identified calls might actually impair PSAP call back or other capabilities for service-initialized calls from subscribers or roamers.

- Are there any cases where this would occur?
- If so, under what circumstances, *e.g.*, which switches or vintages of software?
- What causes this effect?
- What remedies would be required to correct this problem and provide callback capability for all service-initialized callers, including roamers without automatic roaming?

Answer: The Alliance knows of no case where passing calls from non-service initialized handsets inhibits passing ANI from any service initiated handsets. Indeed, today many cell carriers, pass all 911 calls and have no difficulty in providing ANI from its service initiated callers. Call back capability can be provided for all calls by the use of the pseudo MINs as described in the above answers.