

**White Paper**  
**“Blocking Wireless Calls from**  
**Non-Service Initialized Wireless Handsets”**

**Prepared by a Working Group of the NENA Wireless Technical**  
**Committee**  
**Sept. 26, 2003**

**BACKGROUND:**

NUMEROUS Public Safety Answering Points (PSAPs) throughout the U.S. are experiencing a continual problem with users of Non Service Initialized (NSI) handsets making false or harassing 9-1-1 calls. Since the handsets do not have active service with a carrier, there is no valid callback number for these handsets, making identification of the perpetrator difficult. It was noted that in jurisdictions where Phase I or Phase II service is available, the location data provided may assist these agencies in taking law enforcement action. But for many of these “false” calls, that is not possible. Some PSAPs are being inundated by repeated calls from the same NSI handset, which has the potential to block genuine emergency calls. PSAPs will often place a request (sometimes through a court order) to a wireless carrier to “block” calls from a particular handset. The carriers response to such request are that the FCC mandates that all calls, regardless of their service status, are delivered to a PSAP, as specified in Docket 94-102 and later orders.

ON Oct. 31, 2002, the Federal Communications Commission issued a statement commenting on the requirement for Wireless Service Providers (WSP’s) to process all 9-1-1 calls. The FCC clarified its position to state that a WSP may selectively block calls from a particular handset if a Public Safety Answering Point (PSAP) has requested such action due to repeated harassing or nuisance calls from a handset user. (Appendix A.) In other words, the FCC’s position appears to be permissive in the selective blocking of such calls when a PSAP identifies a particular handset or group of handsets which are creating a nuisance or an impediment to emergency call response. Commissioner Kevin Martin issued a separate statement emphasizing that the commission’s intent was not to prevent carriers from blocking harassing 9-1-1 calls. (Appendix B.)

REALIZING that there were a number of technical issues which were unaddressed with respect to NSI call blocking , the NENA Wireless Technical Committee authorized the formation of a working group to ascertain if a viable methodology existed to meet the needs of the Public Safety Community. The working group was formed on November 8, 2002 with a request for participation from public safety agencies, WSPs and wireless switching equipment vendors. (A list of participants is in Appendix C.)

## **FINDINGS:**

CARRIERS adhered to the “forward all calls” rule and had advised the Public Safety Community of their obligation which prohibits them from blocking calls from an NSI handset. A more appropriate response would have been to advise PSAPs that it is not technically feasible to perform call blocking on a 9-1-1 call.

WIRELESS switching systems (Mobile Switching Centers, or MSC’s) allow an emergency call to bypass all authentication and ciphering processes. Therefore, it is not possible from a technical standpoint to “block” calls from a Non Service Initialized (NSI) handset. (See Appendix D.) NSI handsets in the majority of cases do not provide a callback number to the PSAP. When they do, it is often a “recycled” number that is currently in use by another customer, or is in the carrier’s un-assigned pool. Use of the ESN (Electronic Serial Number) is not feasible at this time because no switch manufacturer uses the ESN solely as part of its validation process.

DELIVERY of 911 + the last seven digits of the ESN as recommended in Annex C of J-STD-036 (See Appendix F) does not improve a Carriers ability to identify the caller or block calls from an NSI handset. In order to uniquely identify a handset placing calls, at a minimum 11 digits of the ESN must be delivered. In addition to this limitation, a handset that has not had service initialized precludes a carrier from tracking on the ESN.

NON SERVICE INITIALIZATION applies to a variety of handsets. For example, a handset with a valid account can be “turned off,” which then becomes Non Service Initialized. The handset is now blocked from placing any outgoing calls with the exception of 9-1-1 calls.

CARRIER specific blocking is not feasible as a handset that is blocked by a particular carrier may roam to another carrier with a compatible air interface and complete a 9-1-1 call.

SUCCESSFUL blocking of calls from an NSI handset has been demonstrated by one WSP . However, certain circumstances make this procedure inapplicable in most cases. This incident is summarized in Appendix E.

## **CONCLUSIONS:**

WIRELESS Service Providers do not currently have the technical means to selectively block unwanted calls from specific NSI (Non Service Initialized) wireless handsets, except in certain unusual and particular circumstances. However, there are occasions when the carrier can provide a PSAP with information which may be helpful in identifying and locating the originator of unwanted calls. Carriers should provide as much assistance as technically possible when requested by a PSAP. Such information (if available) may include the locations from which calls were made and information about former subscribers who were assigned a mobile directory number or ESN relating to the calls.

ESIF has under consideration two issues which relate to this subject. One is the study of the FCC’s “all calls” rule, to better define its purpose and determine if changes should be

recommended. The other issue is whether to adopt a technical standard which recommends that all MSC's (Mobile Switching Centers) provide an enhanced PSAP with a consistent display for all NSI handsets. The proposal currently on the table is to use 911 plus the last seven digits of the handset's ESN (Electronic Serial Number) in accordance with Annex C of J-STD-036 (See Appendix F). This group recommends that both of these proposals be evaluated with regard to any impact they may have in conjunction with this white paper and the proper manner to address harassing wireless 9-1-1 calls from an NSI handset.

IN CONCLUSION, the most important aspect of dealing with the harassing and unnecessary call issue is for carriers to cooperate fully with PSAPs in trying to identify perpetrators with information that can lead to a cessation of calls.

## Appendix A

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### **FCC CLARIFIES THAT 911 CALL-FORWARDING RULE DOES NOT PRECLUDE WIRELESS CARRIERS FROM BLOCKING FRAUDULENT 911 CALLS FROM NON-SERVICE INITIALIZED PHONES PURSUANT TO STATE AND LOCAL LAW**

#### **CC Docket No. 94-102**

This Public Notice clarifies that Section 20.18(b) of the Commission's rules,<sup>1</sup> which requires mobile wireless carriers<sup>2</sup> to forward all wireless 911 calls to Public Safety Answering Points (PSAPs) without respect to the call validation process, does not preclude these carriers from blocking fraudulent 911 calls from non-service initialized phones<sup>3</sup> pursuant to applicable state and local law enforcement procedures.

On May 31, 2002, the National Emergency Number Association (NENA), together with the Association of Public Safety Communications Officials International (APCO) and the National Association of State Nine One One Administrators (NASNA), submitted a letter that illustrated the disruption to 911 services that can be caused by harassing, abusive, or prank calls.<sup>4</sup> In particular, the letter highlights the waste of public safety resources that results from fraudulent 911 calls made from NSI handsets, which lack a call back number.<sup>5</sup> For example, in Minneapolis, Minnesota, 658 emergency calls were made from a non-initialized phone over a two and a half week period, with the ensuing

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<sup>1</sup> 47 C.F.R. § 20.18(b).

<sup>2</sup> Wireless carriers subject to Section 20.18 are Broadband Personal Communications Services (part 24, subpart E of this chapter), Cellular Radio Telephone Service (part 22, subpart H of this chapter), and Geographic Area Specialized Mobile Radio Services and Incumbent Wide Area SMR Licensees in the 800 MHz and 900 MHz bands (included in part 90, subpart S of this chapter). Service providers in these enumerated services are subject to section 20.18 solely to the extent that they offer real-time, two way switched voice service that is interconnected with the public switched network and utilize an in-network switching facility which enables the provider to reuse frequencies and accomplish seamless hand- offs of subscriber calls. *See* 47 C.F.R. §§ 20.18(a), 20.18(b).

<sup>3</sup> Non-service initialized wireless mobile telephones (NSI phones) are phones that are not registered for service with any Commercial Mobile Radio Service (CMRS) carrier.

<sup>4</sup> Letter from James R. Hobson, Counsel for NENA, to Marlene H. Dortch, Secretary, FCC, CC Docket 94-102, filed May 31, 2002 (*May 31, 2002 Letter*).

<sup>5</sup> An NSI phone lacks a dialable number because carriers generally assign a dialable number to a handset only when a customer enters into a service contract.

investigation taking approximately 150 hours of law enforcement time.<sup>6</sup> The public safety agencies' letter emphasizes that in this example and others, the wireless carrier declined to block 911 calls from the NSI handset identified as transmitting the harassing calls, citing the Commission's rule requiring all wireless 911 calls to be forwarded to PSAPs without respect to the call validation process.

The underlying purpose of the Commission's adoption of the 911 call forwarding requirement in Section 20.18(b) is to ensure that any person who attempts to place a 911 call through the facilities of a mobile wireless carrier will not be subject to any call validation procedures that could delay or obstruct the delivery of the 911 call to a PSAP.

<sup>7</sup> In adopting the rule, the Commission particularly focused on the impact that the screening of 911 calls through the validation process would have on roamers making 911 calls from areas where there is no service agreement between the serving and home carriers.<sup>8</sup> The Commission also recognized, though, that while carriers have the obligation to forward all wireless 911 calls to PSAPs without respect to the call validation process, PSAPs will play an important role in monitoring incoming calls and initiating efforts to guard against fraudulent use of the 911 system.<sup>9</sup>

Consistent with this approach, pursuant to the request by NENA, APCO, and NASNA, we clarify that Section 20.18(b) of the Commission's rules does not preclude carriers from complying with a PSAP's request to block harassing calls from non-service initialized phones pursuant to applicable state and local law enforcement procedures. The Commission's determination to require the forwarding of all wireless 911 calls without regard to the caller's service subscription status was intended to enable authentic emergency calls, not fraudulent or abusive calls. Where a PSAP has identified a handset that is transmitting fraudulent 911 calls and makes a request to a wireless carrier to block 911 calls from that handset in accordance with applicable state and local law enforcement procedures, the carrier's compliance does not constitute a violation of Section 20.18(b).

This *Public Notice* can be downloaded in Text and ASCII formats at: [http://www.fcc.gov/\\_\\_\\_\\_](http://www.fcc.gov/____). For further information, contact Stan Wiggins, Policy Division, Wireless Telecommunications Bureau, at (202) 418-1310, or Won Kim, Policy Division, Wireless Telecommunications Bureau, at (202) 418-1368.

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<sup>6</sup> *May 31, 2002 Letter* at 2.

<sup>7</sup> Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, RM-8143, *Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd 18676, 18692-99, paras. 29-46 (1996) (*E911 First R&O*); *Memorandum Opinion and Order*, 12 FCC Rcd 22665, 22679-22685, paras. 25-41 (1997) (*E911 MO&O*).

<sup>8</sup> *See E911 MO&O*, 12 FCC Rcd at 22682-83, para. 34.

<sup>9</sup> *See id.* at 22684, para. 37.

Action by the Commission on October 29, 2002: Chairman Powell; Commissioners Abernathy, Copps and Martin. Commissioner Martin issuing a separate statement.

## Appendix B

### **SEPARATE STATEMENT OF COMMISSIONER KEVIN J . MARTIN**

*Re: FCC Clarifies That 911 Call-Forwarding Rule Does Not Preclude Wireless Carriers From Blocking Fraudulent 911 Calls From Non-Service Initialized Phones Pursuant to State and Local Law, Public Notice, CC Docket No. 94-102*

I write separately to emphasize my support for this public notice, which makes clear that the Commission's rules in no way preclude Public Safety Answering Points (PSAPs) and carriers from blocking harassing wireless 911 calls from non-initialized phones.

Harassing 911 calls from non-initialized phones are a significant problem for PSAPs, causing disruptions to emergency telephone services and a waste of public safety resources. Such calls have been a source of real concern for public safety officials. For example, in my home state of North Carolina, a non-initialized wireless phone made over 3600 harassing 911 calls from December of 2001 to January of 2002. *See* Letter from James R. Hobson to Marlene H. Dortch at 3, CC No. 94-102 (May 31, 2002). The wireless carrier believed it was unable to block the calls based on its understanding of the Commission's rules. *See id.* This public notice should put an end to such confusion and make clear that PSAPs and carriers may block harassing 911 calls pursuant to state and local law. I am pleased that the Commission has addressed the issue, and I strongly support the Commission's efforts to help public safety officials focus their resources on true emergencies.

## Appendix C

Participants in the NENA Working Group studying wireless 9-1-1 “call blocking”

<b>Last Name</b>	<b>First Name</b>	<b>Affiliation</b>
Baird	Cat	Surewest Communications
Beard	Travis	Qwest
Brzezowski	Dave	Triton PCS
Crosthwaite	Wendy	Roseville Telco/Surewest
Drennan	Mark	Intrado
Forbes	Lolita	Verizon Wireless
Hinkleman	Tom	SBC
Hoover	Annabeth	Sprint PCS
Johnson	Matt	Triton PCS
Jones	Rick	NENA
Jurecka	Joe	Nortel
Kaszer	Don	Sprint PCS
Muse	Allen	AT&T Wireless
Panagotopoulos	Bill	Triton PCS
Petti	Bonnie	Verizon Wireless
Piercy	Larry	Sprint PCS
Propst	Jim	Sprint PCS
Rhodenizer	Gary	Aliant Telecom
Rollender	Douglas	Lucent
Scordo	Teresa	Alltel
Smith	Barbara	Nortel
Thaper	Atul	Telcordia
Wilson	Scott	Sprint PCS
Zeller	Vickie	Sprint PCS



## Appendix D

*The following is a generic description of how an MSC (Mobile Switching Center) authenticates a call from a mobile station, both in the “normal” mode and for emergency calls.*

### **MS (Mobile Station) Origination and Dialed Number**

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When the MS attempts to originate a call, the Serving MSC will check to see if the MS is registered and if it is not, registration will be attempted.

Send a Registration notification to the Home Location Register to determine if the mobile should be allowed to make calls, if they have any restrictions on types of calls, or locations from which they can make calls, etc.

The Electronic Serial Number (ESN) and the Mobile Identification Number (min) are used to look up the record.

The Mobile switching center identification number (MSCID) indicates where the MS is currently located.

Other parameters are populated as needed (due to border cell access, authentication capabilities or SS7 networking)

If a record for that MIN/ESN combination is not found, “service denied” is returned.

A VLR record is created in the serving MSC that contains the information from the registration.

Some of the parameters included in the VLR/HLR records are:

Geographic Authorization - is the mobile allowed to make calls from that MSC?

Origination Indicator - defines the type of calls the MS is allowed to originate.

Origination Triggers - defines the origination trigger points that are currently active for the subscriber.

Restriction Digits – usually is used in conjunction with the origination indicator to redirect any call originations to a specific number (i.e. payment information).

### **Dialed digits and validation**

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If the dialed number is an emergency number (911) any information contained in the VLR/HLR that indicates denied service will be ignored and the call will be allowed to process.

If non-emergency numbers are dialed by a MS that is restricted from making any or some types of calls the call will be blocked accordingly.

## Appendix E

*(Following is a summary of an incident in which a wireless carrier blocked an NSI phone from placing 9-1-1 calls)*

*This individual case would not necessarily be applicable to any NSI phone. In this instance the switch type was a Lucent type 5E and the phone number in the NSI status phone had not been reassigned to another customer.*

1. The non service initialized phone accessed a Lucent 5E and made repeated calls to a PSAP (Public Safety Answering Point) to the degree it was interfering with the agency's handling of valid emergency calls.
2. The carrier called Maintenance Engineering for Lucent because their own staff did not know if this could be prevented.
3. After considerable study, the switch vendor's engineers concluded that because of the way 9-1-1 calls are routed they could only come up with one solution that was extremely limited. They performed testing to see if an invalid dialing class code would prevent calls to 9-1-1. The solution would only work if the directory number already programmed into in the handset had not been reassigned.
4. They verified that the number in the phone calling 9-1-1 had not been reassigned.
5. A subform had to be manually built in the switch the phone was accessing with an invalid dialing class code
6. If the caller moved and accessed another switch calls could not be blocked
7. Manual follow-up was required to remove a subform
8. The solution required factory support and someone available with access to the switch who possessed knowledge on how to build a subform.

*When a customer account is closed, a typical wireless carrier will usually "re-cycle" the phone number from that account to a new customer within 30-45 days.*

## Appendix F

### **Annex C: Non-dialable Callback Numbers**

This annex is informative and is not considered part of this Interim Standard.

There are several situations when a mobile station does not have a valid callback number. This is the case for non-initialized mobiles, mobile phones whose subscription has expired, mobile phones without a subscriber identity module inserted, mobile phones from other countries and mobile phones from a service provider that does not have a roaming agreement with the current serving service provider. In these situations, a non-dialable callback number derived from the ESN or IMEI may be used to identify the emergency services caller.

**Table C-1: Non-dialable Callback numbers**

	<b>Non-dialable Callback number format</b>
ESN known	911 + last 7 digits of ESN expressed as a decimal number
IMEI known	911 + last 7 digits of IMEI expressed as a decimal number