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

In the Matter of	)	
	)	
Amendment of Parts 2 and 90 of the	)	RM-10836
Commission's Rules to provide for an	)	
Emergency Vehicle Signaling Service	)	

To: The Media Bureau

COMMENTS OF THE NATIONAL ASSOCIATION OF BROADCASTERS

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EXECUTIVE SUMMARY

The National Association of Broadcasters ("NAB") submits these comments in response to the Commission's Public Notice. On November 19, 2003, Alert Devices International Corporation ("Alert Devices") filed a Petition for Rulemaking seeking to amend the Commission's Rules to allow emergency vehicle warnings to be transmitted over AM and FM broadcast radio signals, thereby creating an Emergency Vehicle Signaling Service ("EVSS").

Alert Devices' purported purpose, to alert motorists of approaching emergency and public safety vehicles, is a laudable goal, but it is far from clear that its proposal is the best means of achieving that goal. Of more immediate concern, however, is that Alert Devices is currently manufacturing and selling an unlicensed EVSS transmitter device over the Internet, without any apparent mechanism to control purchasers of equipment that jams broadcast signals, and in clear violation of Part 15 of the Commission's Rules. NAB strongly urges the Commission to require Alert Devices immediately to cease its sale of the transmitting device pending the outcome of this proceeding.

Further, Alert Devices has failed to provide any technical specifications for this device; thus, it is not possible to evaluate the speed and transmission "safeguards" Alert Devices claims it has designed. Alert Devices' system is also both overinclusive and underinclusive because it cannot notify motorists not currently tuned into AM or FM radios (*e.g.*, those persons listening to cassette tapes, compact discs or satellite radio) and is likely to interfere with non-motorists' use of free-over-the-air radio, especially to those listeners living or working in urban areas where emergency vehicles continuously travel.

Nor has Alert Devices presented evidence that alerting only some motorists will, in some manner, garner the appropriate attention of other motorists to pull over to the right to allow emergency vehicles to pass. Conversely, alerting only a segment of the motorist population could conceivably contribute to *more* traffic accidents and alerting motorists traveling in the opposite direction or on adjacent streets (well within the 600 foot radius Alert Devices claims) may cause confusion and severe traffic tie-ups. Simply stated, there is no record upon which this Commission can conclude that, in addition to lights and sirens, transmitting a warning to selected motorists will override all other motorist behavioral tendencies and reduce the number of collisions.

EVSS interruptions may also threaten the viability of EAS and broadcasters' dissemination of other life-saving emergency information, including live coverage of weather-related emergencies (*e.g.*, tornado and hurricane storm-tracking) and AMBER Alerts. The Communications Act of 1934 mandates that broadcasters serve the public interest and in fulfilling their public service obligations, broadcasters have invested millions of dollars into the Emergency Alert System ("EAS") as well as millions of dollars in state-of-the-art weather and electronic newsgathering equipment. The Commission must ensure that EAS transmissions, including live broadcasts, are not continuously interrupted.

Finally, the Commission, in its recent allocation of the 5.9 GHz spectrum for a similar purpose, recognized the importance of a comprehensive emergency warning system that can reach all motorists, not just those tuned in to AM and FM stations. It

would better serve the public interest to adopt one universal technology, rather than authorizing several different schemes, to achieve the goal of alerting motorists. Thus, Alert Devices' *Petition* must be denied.

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I. Introduction and Background.

The National Association of Broadcasters ("NAB")[1] submits these comments in response to the Commission's Public Notice.[2] On November 19, 2003, Alert Devices International Corporation ("Alert Devices") filed a Petition for Rulemaking seeking to amend the Commission's Rules to allow emergency vehicle warnings to be transmitted over AM and FM broadcast radio signals, thereby creating an Emergency Vehicle Signaling Service ("EVSS").[3] NAB welcomes this opportunity to discuss several issues raised by this *Petition*.

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[1] NAB is a nonprofit, incorporated association that serves and represents America's radio and television broadcast stations.

[2] *Public Notice*, Media Bureau Action: Comment Sought on ADiCorp's Petition for Rulemaking on Emergency Vehicle Signaling Service, RM-10836, Rel. Jan. 9, 2004.

The Communications Act of 1934 mandates that broadcasters serve the public interest. In fulfilling their public service obligations, broadcasters have invested millions of dollars into the Emergency Alert System ("EAS") as well as millions of dollars in state-of-the-art weather and electronic newsgathering equipment. NAB does not dispute there may be a need to alert motorists quickly of approaching emergency and public safety vehicles. Alert Devices' purported purpose, to alert motorists of approaching emergency and public safety vehicles, is a laudable goal, but it is far from clear that its proposal is the best means of achieving that goal. Of more immediate concern, however, is that Alert Devices is currently manufacturing and selling an unlicensed EVSS transmitter device over the Internet, without any apparent mechanism to control purchasers of equipment that jams broadcast signals.[4] NAB strongly urges the Commission to require Alert Devices immediately to cease its sale of the transmitting device pending the outcome of this proceeding.

Further, Alert Devices has failed to provide any technical specifications for this device. As discussed below, Alert Devices' system is both overinclusive and underinclusive because it cannot notify motorists not currently tuned into AM or FM radio, is likely to interfere with non-motorists' use of free-over-the-air radio, and may threaten the viability of EAS and broadcasters' dissemination of other life-saving emergency information. Finally, the Commission, in its recent allocation of the 5.9 GHz

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[3] In the Matter of Amendment of Parts 2 and 90 of the Commission's Rules to Provide for an Emergency Vehicle Signaling Service, Petition for Rulemaking of ADiCorp, Nov. 19, 2003 (hereinafter "*Petition*").

[4] *See* http://www.alerttechintl.com/ (last visited Feb. 12, 2004).

spectrum for a similar purpose,[5] recognized the importance of a comprehensive emergency warning system that can reach all motorists, not just those tuned in to AM and FM stations. Thus, Alert Devices' *Petition* must be denied.

II. The Commission Must Immediately Require Alert Devices to Cease and Desist the Sale of Its Transmitting Device.

Alert Devices proposes that the Commission develop "service and technical rules that will limit the signaling *only* to public safety vehicles, only while on emergency calls, only over a short range, and only for a few seconds at any location."[6] Paradoxically, in the absence of any FCC rulemaking or oversight pertaining to this service, Alert Devices is already marketing and selling its transmitting device.

NAB objects to Alert Devices' marketing and selling these devices without any FCC approval and we strongly urge the Commission to immediately require Alert Devices to suspend all sales of these transmitting devices pending the outcome of this proceeding. Compounding this concern is the fact that its marketing efforts appear to have been most effective: according to its Internet web site, "...as a result of demand, the production is 6-8 weeks behind order time."[7] Apparently one manufacturer has not been sufficient to satisfy the demand for the EVSS transmitter since, according to Alert Devices, "[t]he order/delivery time is anticipated to be reduced significantly as a second manufacturer has been brought on board."[8] It is interesting to note that in its *Petition*,

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[5] FCC News Release, FCC Adopts Rules for Intelligent Transportation Systems To Advance Homeland Security and Traveler Safety, WT Docket No 01-90, rel. Dec. 17, 2003.

[6] *Petition* at 3 (emphasis added).

[7] *See* http://www.alerttechintl.com/ (last visited Feb. 12, 2004).

[8] *Id*.

Alert Devices presumes that EVSS will be a "licensed" service and discusses how, in order to protect radio broadcasts, EVSS rules should be structured such that:

> If the Commission receives credible interference reports that suggest an EVSS transmitter is operating in violation of the rules – for example, if interference is other than very brief -- the Commission may immediately suspend a suspected *licensee's* EVSS operations, pending investigation. Furthermore, if the interference is severe and the Commission cannot promptly identify which EVSS *licensee* in an area may be out of compliance, the Commission may suspend EVSS operations of all *licensees* operating in the area where the severe interference occurred.[9]

How the Commission could manage to license all of the EVSS transmitters already sold, and all those that could be potentially sold between now and the establishment of rules and procedures for a licensed service, is entirely unclear. Alert Devices' premature introduction of EVSS transmitters into the marketplace casts serious doubts on the "secondary status" protection scheme it suggests, and indeed, that any plan for regulating these transmissions and preventing undue interference to radio broadcasts could be successfully implemented. While Alert Devices may be marketing its product to emergency vehicle operators, it is entirely unclear how Alert Devices is controlling or monitoring purchasers of the transmitting device (*i.e.*, limited to law enforcement and public safety). This device, which can be purchased from the Internet, has the potential to jam over-the-air broadcasts in any given area.

This conduct directly violates Sections 301 and 302 of the Communications Act, casting doubt on Alert Devices' commitment to following any restrictions the FCC might impose. Section 301 of the Communications Act prohibits operation of any apparatus that interferes with any authorized radio transmission. *See* 47 U.S.C. § 301. Further,

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[9] *Petition* at 4 (emphasis added).

Section 302(a) of the Communications Act directs the Commission to make reasonable regulations governing devices which interfere with authorized radio reception. 47 U.S.C. §302(a). Section 302(b) of the Communications Act states that "[n]o person shall manufacture, import, sell, offer for sale, or ship devices or home electronic equipment and systems, or use devices, which fail to comply with regulations promulgated in this section." 47 U.S.C. § 302(b). Because Alert Devices' transmitter is an unlicensed device that intentionally interferes with an existing authorized radio service, its present use is prohibited by the Communications Act.

Its use is also prohibited by the Commission's Rules. Although the *Petition* seeks to amend Part 2 of the Commission's Rules,[10] Alert Devices' products are already available in the marketplace as an unlicensed device that, by design, interferes with authorized radio services. Section 15.201 expressly states that all intentional radiators "shall be certified pursuant to the procedures in subpart J of part 2 of this chapter *prior to marketing*." 47 C.F.R § 15.201(a) (emphasis added). Further, Part 15 requires that operators of intentional radiators are "subject to the conditions that no harmful interference is caused" to authorized radio services. 47 C.F.R. § 15.5(b). Because the Alert Devices product is specifically designed to interfere with licensed services, it cannot be marketed under the Part 15 exceptions. Thus, NAB strongly urges the Commission to immediately require Alert Devices to suspend all sales of these transmitting devices pending the outcome of this proceeding.

[10] *Id*. at 14-15.

III. Alert Devices Has Not Provided Sufficient Technical Information.

Under Sections 301 and 302 of the Communications Act, the Commission must establish regulations to prevent harmful interference to authorized radio services. The Commission has the authority to promulgate reasonable regulations to ensure that devices, including unlicensed devices, do not cause harmful interference to radio communications. *See* 47 U.S.C. §302(a). Alert Devices, however, has not supplied sufficient technical information to allow for a thorough evaluation of its *Petition* and the consequences an EVSS may have on authorized radio services. Below is a discussion of pertinent technical questions raised by the *Petition*.

A. Transmitter Operation Of The EVSS Device Has Not Been Properly Disclosed.

In its *Petition*, Alert Devices failed to disclose significant technical specifications of a product that has already been introduced into the marketplace. Notably absent from the record is any detailed technical information on the transmitting devices' operations, including:

- The number of simultaneous AM and FM frequencies (*i.e.*, channels) the transmitter operates on and the criteria for choosing these frequencies;
- The mechanism by which the EVSS transmitter monitors vehicle speed and emergency light/siren status;
- A description of safeguards (if any) built into the device to prevent unauthorized overriding of the features designed to insure that the transmitter will operate as intended; and
- The mechanism by which out-of-band emissions which could potentially interfere with signals below (*e.g.*, TV Ch. 6) and above (*e.g.*, aeronautical radionavigation) the FM band are mitigated.

Another transmitter-related technical issue not addressed by Alert Devices pertains to the efficacy of the proposed service as a function of distance from radio broadcast facilities. Simply stated, the EVSS transmitter's ability to override existing radio broadcasts will be diminished as an emergency vehicle gets closer and closer to nearby radio broadcasting transmitter sites due to the much greater signal power emanating from the broadcast antenna. Because broadcast transmission facilities for different broadcasters are frequently co-located, sometimes with different stations even operating from the same shared antenna, and by design these broadcast facilities are often located close to (or in the heart of) urban areas so as to reach the greatest population, an EVSS operating in these frequency bands will, in many cases, be least effective where it is arguably needed the most, namely those areas where the population density is greatest. Conversely, alternate frequency allocations already established by the Commission, designed to accommodate an EVSS-type of service with primary status, allow for uniform reception performance regardless of location and provide for a more reliable and effective service, and without the undesired consequence of interfering with radio broadcasts.[11]

B. Alert Devices Has Not Provided Adequate Information On the Impact On Reception of Radio Broadcast Signals.

Alert Devices has not provided the Commission any technical evidence (*e.g.*, computer simulations or field test results) on EVSS signal propagation demonstrating the claims made in the *Petition* regarding efficacy of this service and its potential impact on the reception of radio broadcasts. Of particular relevance would be studies predicting the

[11] These other allocations are discussed below in Section VI.

desired-to-undesired ("D/U") ratios between EVSS and co-channel and 1st-adjacent radio broadcasting facilities (as a function of distance from the EVSS transmitter) for different classes of broadcasting facilities, versus EVSS transmit power; and at differing locations in the broadcasting facility coverage area. Without these studies it is impossible to confirm Alert Devices' assertions regarding the potential impact of the proposed EVSS on radio broadcast operations, or for that matter its claims as to the efficacy of the EVSS service itself. NAB notes that while Alert Devices acknowledges in the *Petition* that radio broadcasts which successfully capture the EVSS transmissions will be interfered with,[12] it ignores the fact that even more receivers, those outside the capture range of the EVSS signal, will also experience interference. This is because the EVSS signal will, for those receivers, be what broadcast engineers refer to as a co-channel interferer — an undesired signal located at the same radio frequency as the desired (radio broadcast) signal, and its presence will interfere with proper reception of that desired signal. Co-channel interference is characterized by the ratio of the signal power of the desired signal with respect to the signal power of the undesired signal, D/U ratio, expressed in dB. Co-channel D/U ratio is one of the principal criteria that the FCC uses to determine how close together FM radio stations operating at the same frequency can be spaced.

To assess the EVSS signal's potential to interfere with a desired radio signal as a co-channel interferer, it is fair to assume that, for FM radio, an EVSS signal will be captured by the FM receiver if it is 10 dB higher in power than the desired radio broadcast—such an EVSS signal would in effect be a co-channel interferer with a D/U ratio of -10 dB. Receivers just beyond this -10 dB D/U co-channel interference contour

[12] *See Petition* at 2, 7.

(centered on the EVSS transmitter) will not capture the EVSS signal but instead will be subject to it as a co-channel interferer, one considerably stronger than that allowed even at the desired signal's protected contour, where by FCC rules the co-channel D/U ratio is set to be no less than 20 dB.[13]

In other words, listeners in the vicinity of the EVSS transmitter (but not actually receiving the signal) will be subjected to co-channel interference as much as 30 dB stronger than that allowed at the station's protected contour. The area over which listeners will be affected by this intense co-channel interference will be many times greater than the area over which listeners will actually receive the EVSS signal. The Alert Devices *Petition* woefully underestimates the interference consequences of its proposed service. The Commission, therefore, should not further consider this *Petition* until such time as Alert Devices studies this impact and submits its findings for review.

C. The FM Transmit Frequency Offset Is Not Explained.

Alert Devices asserts that for FM EVSS transmissions, by locating the EVSS signal slightly off-center of the broadcast channel, a car radio "preferentially captures the cleaner EVSS signal despite its vastly lower transmitter power."[14] Alert Devices, however, does not indicate the amount of offset that is being proposed. Nor is there any evidence of any tests or computer simulations having been performed to substantiate the theory that automobile radios will receive the warning while home, office or portable receivers will not receive the transmission. This asserted "preferential capture," which is

[13] *See* 47 C.F.R. §73.215 (a)(2).

[14] *Petition* at 10.

likely to be affected by receiver design (*e.g.*, synthesized versus non-synthesized RF front ends), is simply not addressed.

D. Impact of EVSS On In-Band/On Channel ("IBOC") Digital Radio Is Unknown.

The radio broadcasting industry has started transitioning to a new, digital service using the "HD Radio" IBOC technology developed by iBiquity Digital Corporation.[15] Using IBOC, AM and FM radio broadcasters are able to provide listeners with a digital audio signal of higher quality and greater flexibility than is possible with the traditional analog signal, within their current frequency allocation and without the need for new spectrum. This is accomplished by the transmission of an additional, digital signal alongside (and beneath, in the case of AM) the analog signal—these so-called "hybrid IBOC" transmissions, currently being deployed by radio broadcasters all across the U.S., are receivable by both traditional analog receivers (which make use of the analog portion of the signal) and new IBOC receivers (which make use of both analog and digital portions). The Commission must ensure that EVSS devices to not cause interference to any authorized service, including IBOC. The *Petition* presents no evidence that would allow the Commission to make that judgment.

How an IBOC digital radio receiver will be affected by the EVSS transmission is, at this point, wholly unknown. Because of the fact that the digital portion of the IBOC signal has much lower power (95-99% lower) than the companion analog signal, the

[15] In the Matter of Digital Audio Broadcasting Systems And Their Impact on the Terrestrial Radio Broadcast Service, *First Report and Order*, MM Docket 99-325, rel. Oct. 11, 2002.

presence of an EVSS signal could have a much more significant impact on IBOC digital reception than it does on analog reception.

E. The Interference Potential To Varying Receiver Types Is Unknown.

AM and FM broadcast receivers vary greatly in their sensitivity and capture performance.[16] For example, while an EVSS transmission that is 10 dB greater in signal strength than a co-channel FM station may be adequate for one make of receiver to capture the emergency message, it may be completely inadequate for another. The signal levels of broadcast FM stations vary with time and location due to the effects of multipath and other propagation phenomena. The Alert Devices signal level must be sufficiently higher than the broadcast signal in order to overcome all the variations in the AM and FM stations and "hold" the receiver in order to ensure that the emergency message will be heard. Also, an FM signal transmitting at a low height of 2 meters (the approximate height of a vehicle mounted Alert Devices antenna) will, particularly in urban environments, likely create a significant amount of multipath, contrary to the Alert Devices assertion that the EVSS signal will be "...steadier and 'cleaner' than the broadcast signal."[17] The performance of AM and FM receivers in the presence of multipath varies widely. Alert Devices has provided no technical analysis that shows whether its system can function consistently in the presence of such conditions. Nor has it demonstrated on the record an understanding of the effects of AM and FM receiver

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[16] *See* Office of Engineering and Technology, Federal Communications Commission, Second and Third Adjacent Channel Interference Study of FM Broadcast Receivers, Project TRB-99-3, July 19, 1999 (placed in record on Aug. 3, 1999*; see also* A Review of Four Studies of FM Receiver Adjacent-Channel Immunity, attached as Appendix B of Reply Comments of NAB, *In Re Creation of A Low Power Radio Service*, MM Docket No. 99-25, filed Aug. 2, 1999.

[17] *Petition* at 10.

variability on its system. Thus, there is no means to adequately evaluate the proposed EVSS system and its impact on licensed radio services.

IV. The Alert Devices System is Both Overinclusive and Underinclusive and Thus Does Not Properly Target Its Message To An Appropriate Audience.

A. The Alert Devices System Is Overinclusive.

Despite a lack of technical information, Alert Devices presents its product system as a "better public safety protection."[18] EVSS as envisioned by Alert Devices, however, is inherently overinclusive and underinclusive. The system functions by overriding broadcast radio signals.[19] The goal of the Alert Devices system is to alert persons within a specified area of an approaching emergency vehicle. On a fundamental level, a system that overrides *all* radio signals is overinclusive, because an alert sent from an Alert Devices transmitter will inevitably reach many more people than those to whom Alert Devices is targeting alerts. Alert Devices states that its mobile transmitters are intended to warn *motorists* of approaching emergency and public safety vehicles.[20] Adjacent, however, to the streets on which Alert Devices intends to operate are millions of people working in office buildings, retail stores, and private homes, many of whom choose to listen to broadcast radio during the course of the day: recent listening studies show that at-home and at-work listening combined is nearly double that done in the car.[21]

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[18] *Id.* at 2.

[19] *Id*. at 8-9.

[20] *Id.* at 1.

[21] *See The Arbitron National In-car Study*, Arbitron Incorporated, Dec. 2003. According to Arbitron, the Average Quarter Hour (AQH) ratings for in-car, at home, and at work listening are 5.0, 6.0, and 3.7 respectively. These figures apply to listeners 12 and older listening from Monday-Sunday, 6 AM to 12 midnight.

In urban areas where every day emergency vehicles move through dense urban traffic, millions of people are likely to have their radio listening interrupted as a consequence of EVSS. Arguments offered in the *Petition* to diminish the expected impact of EVSS on non-mobile listening belie the truth that these stationary listeners will be the most frequently and adversely impacted. Further, it is likely that the kinds of receivers being used in these stationary locations will be more susceptible to reception of the EVSS transmission due to the design differences between stationary and mobile radio receivers; this combined with the fact that many stationary listeners will be subject to repeated interruptions as emergency vehicles travel along preferred routes (past the *same* stationary listeners) throughout the day suggest that it is these stationary listeners who will be the ones most adversely affected by the proposed EVSS.[22] These and similar foreseeable situations could lead to continuous interruption for non-motorist broadcast listeners. Indeed, in amending its Part 15 rules authorizing the use of biomedical telemetry devices, the Commission has already recognized that residential broadcast receivers should not be subject to unnecessary interference from "within an ambulance or other moving channel."[23] Here too, the Commission must ensure that broadcast receivers are not subject to unnecessary, and potentially continuous interference.

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[22] Some of the differences between mobile and stationary radio receiver design which have the potential to make the stationary receivers more susceptible to interference from a passing EVSS transmitter include synthesized (mobile) versus non-synthesized (stationary) tuning (making the stationary receiver more susceptible to an off-frequency signal) and narrowband (mobile) versus wideband (stationary) intermediate frequency (IF) filters (making the stationary receiver more susceptible to interference from the multi-channel EVSS transmission).

[23] Amendment of Part 15 of the Commission's Rules to permit operation of biomedical telemetry devices on VHF TV channels 7-13 and on UHF TV channels 14-16, 12 FCC Rcd 17828 (1997) at ¶ 34.

Alert Devices itself recognizes that home radio listeners who have no need for the information provided by EVSS will nevertheless have their radio listening interrupted and be subject to unwanted reception of these signals.[24] It is not persuasive that these interruptions are intended to be brief, " a few seconds" in duration.[25] The Commission has already rejected a similar argument because the frequency of such interruptions could be tantamount to continuous interference.[26] To individuals residing or working near locations where emergency vehicles are frequently found — police and fire stations, hospitals, etc., EVSS interference to radio listening could be nearly continuous. And as discussed above in Section III.B, it is not just the listeners whose radios actually capture the EVSS signal that will be affected — significantly greater numbers of listeners, over a broad area, will also be subjected to intense co-channel interference from the EVSS transmitter. In these areas, interference from EVSS could easily become the dominant factor for listeners as to whether they choose to listen to terrestrial radio. Any listener constantly subjected to unnecessary interruptions or degradations in service, as these listeners are likely to encounter, would understandably think twice before turning on their radios.

In acknowledging the potential impact of EVSS on stationary listeners, Alert Devices offers a number of sweeping observations regarding urban design, all

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[24] *Petition* at 2, 8.

[25] *Id.* at 3.

[26] *See* Amendment of Parts 2 and 15 of the Commission's Rules to Deregulate the Equipment Authorization Requirements for Digital Devices, *Second Report and Order and Memorandum of Opinion and Order*, ET Docket No. 01-278, July 17, 2003 at ¶ 14 (rejecting ADEMECO, Cisco, *et al.'s* request to lengthen the time restriction on date transmission by Part 15 remote control devices).

unsubstantiated, in an attempt to demonstrate that this impact will be minor. Specifically, Alert Devices states that:

> Roadway design also minimizes the impact on home listeners. EVSS transmissions will be most frequent on roads with the highest traffic density. But the wide right-of-way on such roads insures a minimum distance between vehicles and residences, and the traffic generally moves fast, ensuring that any interruptions are short.[27]

The fact is that the U.S. is an increasingly urban society—according to the latest U.S. census, roughly 80% of the population is located in urban areas (nearly half in a "central place),"[28] where Alert Devices' assumptions on the distance between vehicles and residences are least likely to apply. Alert Devices notes that "[o]n residential side streets, the reduced EVSS power associated with lower vehicle speeds will likewise keep interruptions rare and brief."[29] Yet an emergency vehicle rushing to the scene of an accident or a crime is likely to be moving faster than the posted speeds so the EVSS transmitter power will be less reduced than suggested (if at all). Notably, the device currently available for purchase on the Alert Devices' web site does not appear to include any of these power-reducing capabilities but will instead override broadcast signals in a 600 foot radius.[30] Once again, Alert Devices ignores the impact on listeners not receiving the EVSS signal but nevertheless subject to significantly increased levels of co-channel interference due to their proximity to the EVSS transmitter.

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[27] *Petition* at 7.

[28] 2000 U.S. Census. *See* U.S. Census Bureau, http://www.census.gov (last visited Feb. 10, 2004).

[29] *Petition* at 8.

[30] *See* http://www.alerttechintl.com/ (last visited Feb. 12, 2004).

Further, Alert Devices asserts, "[t]he 60 mph range [where the EVSS transmitter power will be greatest] is likely to be achieved only on high-speed roadways, which tend to be well separated from residences."[31] This statement makes little sense — multi-lane, major non-limited-access roadways in urban and suburban areas are often in close proximity to residences (and work places) and have posted speed limits up to 60 mph. Emergency vehicles routinely travel well in excess of this speed on such roadways; hence residences and offices near these roadways can expect to be subject to the full broadcast power (and the maximum interfering potential) of the EVSS transmitters.

Alert Devices also offers technical arguments as to why the impact of EVSS on home listeners will be minimal: arguments, which on closer inspection are wholly unsubstantiated. In discussing the rationale for offsetting the FM transmit frequencies from an EVSS transmitter (with respect to assigned FM radio channel center frequencies), Alert Devices suggests that "[h]ome radios...receive a steadier signal from the broadcast station [than do car radios], and so are more likely to stay on that frequency and reject the fluctuating EVSS signal from a passing emergency vehicle."[32] In fact, there are many circumstances in which home radios do *not* generally receive a steadier signal than do car radios. One example is radios in homes near airports where FM signal propagation is routinely affected by aircraft passing overhead.

Nor can it be assumed that home radios would in general be less likely to receive (or be interfered with by) an EVSS signal. For example, home radios by design typically have much wider intermediate frequency ("IF") circuits than do car radios. Thus, they

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[31] *Petition* at 9.

[32] *Id.* at 11.

are less effective at rejecting strong adjacent channel signals.[33] A passing EVSS transmitter, transmitting simultaneously on multiple FM frequencies could "desensitize" the home receiver, thereby seriously impairing reception. Ironically, Alert Devices' frequency offsetting scheme for FM transmissions, offered as a mechanism for improving car radio reception while at the same time making home radio reception less likely, could have exactly the opposite effect. While most modern car radios make use of digitally-controlled, "synthesized" tuner sections (which may actually better reject a frequency-offset EVSS signal than one which is not offset), less expensive clock radios and "boom boxes," often found in the home and workplace, are more likely to make use of non-synthesized FM tuners relying on older-design, analog automatic frequency control ("AFC") circuitry better able to capture the frequency-offset EVSS signal. Thus, stationary listeners are likely to be severely impacted by the use of EVSS, and could severely reduce, if not cripple, broadcasters' ability to serve the listening public.

B. The Alert Devices System Is Underinclusive.

Although the Alert Devices system is overinclusive in that it has the potential to reach many more people than necessary, the system is also underinclusive, because it operates under the assumption that if a percentage of motorists (*i.e.*, those tuned in to AM

[33] In 1999 NAB commissioned the Carl T. Jones Corporation to test an extensive sample of modern radio receivers to ascertain their susceptibility to adjacent channel interference. Five different categories of receiver were tested under this study—automobile, clock, component, personal, and portable—and the automobile receivers were found to be the most effective by far in their ability to reject adjacent channel signals. The clock, component, and portable receivers (the ones most likely to be used in the home) were on average the worst performing group when subjected to adjacent channel interference. *See* Receiver Performance Study, attached as Volume II of Comments of NAB, *In Re Creation of A Low Power Radio Service*, MM Docket No. 99-25, filed Aug. 2, 1999.

or FM radio stations) are warned, "lives will be saved as a result."[34] Alert Devices' system, however, is inherently ineffective because many motorists *will not* hear Alert Devices alerts. Drivers listening to a cassette tapes, compact discs, or satellite radio will not hear alerts broadcast over the radio. Drivers who do not have their radios turned on will be unable to receive the alerts.

In addition, thousands of public transportation vehicles, such as buses, school buses, and streetcars, are not likely to be equipped or listening to broadcast radio. Other vehicles, such as delivery trucks and taxicabs, may be tuned to their own radio communications system – Alert Devices transmitters would not reach these private systems. Large buses and trucks tend to be difficult to maneuver, and when operators of these vehicles are left unwarned, it leaves operators of safety vehicles in the same situation that the Alert Devices system is designed to remedy.

Alert Devices' *Petition* rests on the presumption that "a driver encased in a nearly-airtight car with factory-tinted windows and the radio playing"[35] cannot hear or see approaching emergency vehicles. While NAB does not dispute the number of accidents and fatalities cited by Petitioner, it is wholly unclear whether the cause can be attributed to this presumption alone, or whether other behavioral tendencies are contributing to emergency vehicle collisions. There may be many reasons while drivers fail to yield to emergency vehicles, ranging from distractions of "streets clogged by signs, overhead wires, pedestrians, buses, and double-parked vehicles"[36] to drivers who "seem

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[34] *Id.* at 2.

[35] *Petition* at 1.

[36] *Failure to Yield; S.F. Drivers Can't Seem to Get Out of the Way Of Emergency Vehicles*, The San Francisco Chronicle, Apr. 12, 2002.

either unwilling to yield or not sure what to do when they hear a roaring siren. Instead of pulling to the right and stopping, some pull to the left, some stop where they are and others just keep going."[37] The *Petition* fails to address the behavioral science of motorist response to emergencies beyond stating unsupported conclusions. Nor has the Petitioner presented evidence that alerting only some motorists (*i.e.*, those tuned into AM or FM radio stations), will, in some manner, garner the appropriate attention of other motorists to pull over to the right to allow emergency vehicles to pass. Conversely, alerting only a segment of the motorist population could conceivably contribute to *more* traffic accidents. Further, alerting motorists traveling in the opposite direction or on adjacent streets (well within the 600 foot radius Alert Devices claims) may cause confusion and severe traffic tie-ups. Simply stated, there is no record upon which this Commission can conclude that, in addition to lights and sirens, transmitting a warning to selected motorists will override all other motorist behavioral tendencies and reduce the number of collisions.

Finally, these alert messages have other significant unintended consequences. Being inundated with frequent, inaccurate, and/or inapplicable alert messages may cause the general public to become de-sensitized to these and other alert messages altogether, a situation which could severely impact the effectiveness of other emergency warning

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[37] *The Life You Save May Be Your Own, EMS Drivers Learn*, St. Petersburg Times, Dec. 14, 2003. *See also Life or Death Courtesy*, The Desert Sun, Jan. 7, 2004, in which the Chief of the Riverside County Fire Department observed that "when the sirens are blaring and the lights are flashing, most people seem to forget everything they originally learned. They often 'freak out' and just slam on the brakes or even pull to the left;" *Fire Engine Limits Set; Under Changes Expected This Year, Drivers Face Speed Restrictions*, Los Angeles Times, Aug. 19, 2003, in which Police Sgt. Robert Guillermo stated that "[s]ometimes you'll find an individual who says, 'If I just stay ahead of [emergency vehicles,' I'll be fine' …. [s]o they speed up."

systems, such as EAS and AMBER Alerts. Messages that frequently alert listeners to situations or circumstances when the message is irrelevant to them (*e.g.*, vehicle is operating on an adjacent street or in another direction) may cause listeners to "tune out" when they hear alert messages, or turn off their broadcast radio channel altogether, thereby further rendering the Alert Devices System underinclusive.

V. Alert Devices Threatens to Interfere With the Emergency Alert System.

A. Broadcasters Have A Vested Interest in EAS.

The fundamental goal of the United States' EAS, the successor to the Emergency Broadcast System ("EBS"), is to provide Americans with adequate warning of an emergency so that they can prepare and safeguard themselves. This alert system has been significantly remodeled twice in its fifty-year history. Created in 1951 by President Harry S. Truman for the purpose of national security, EBS was revised in 1976 during the Ford Administration and beginning in 1994, EBS gave way to the current EAS system, providing for greater reliability than its predecessor by depending more on automation and other reliable systems and procedures.[38] Although the system has never been activated intentionally on a national level, it is used on average over a thousand times per year to warn citizens of state and local emergencies, including storms, hurricanes, floods, tornadoes, and other civil emergencies.

Informing the public of national, state and local emergencies has been an important part of broadcasters' public service obligations for many years. Broadcasters take their role in the EAS very seriously and NAB has been an active participant of EAS

[38] In the Matter of Amendment of Part 73, Subpart G, of the Commission's Rules Regarding the Emergency Broadcasting System, *Report and Order*, 10 FCC Rcd 1786 (1994).

proceedings.[39] Together with the Commission, broadcasters have strived to provide for greater reliability of information and have the capability to pinpoint the dissemination of emergency alerts on a community-by-community basis.[40] The creation of the modern EAS came at a cost of over $27,000,000 to the broadcast industry, at an average of $2000 per broadcast station.[41] In addition, broadcasters have invested millions of dollars in state-of-the art weather and electronic newsgathering equipment to bring viewers live, instantaneous and detailed coverage of emergencies. It is clear that the national, state and local public interests – and the interests of various levels of government — are served by an efficient EAS provided over electronic mass media services. As such, it would appear that any system, be it designed by commercial entities or through a private-public forum, must not interfere with, or be duplicative of, EAS transmissions. NAB has and continues to actively participate in forums such as the FCC's Media Security and Reliability Council, NTIA, Department Homeland Security and the Partnership for Public Warning to work towards improving public warning through technological developments.

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[39] *See, e.g.*, Comments of NAB, filed January 13, 1993; Comments of NAB, filed November 12, 1993; NAB Petition for Partial Reconsideration, filed January 27, 1994; Comments of NAB, filed February 22, 1995; NAB Reply to Oppositions, filed March 6, 1995; and Comments of NAB on Second Notice of Proposed Rulemaking, filed April 20, 1998.

[40] *See* Comments of NAB, FO Docket Nos. 91-301 and 91-171, filed January 13, 1993; Comments of NAB, FO Docket Nos. 91-301 and 91-171, filed November 12, 1993; NAB Petition for Partial Reconsideration, FO Docket Nos. 91-301 and 91-171, filed January 27, 1994; Comments of NAB, FO Docket Nos. 91-301 and 91-171, filed February 22, 1995; NAB Reply to Oppositions, FO Docket Nos. 91-301 and 91-171, filed March 6, 1995; Comments of NAB on Second Notice of Proposed Rulemaking, FO Docket Nos. 91-301 and 91-171, filed April 20, 1998; and Comments of NAB, ET Docket No. 01-66, filed June 11, 2001.

[41] This is NAB's conservative estimate based on 12,000 radio stations and 1,500 television stations each paying an average of $2000 for their EAS equipment.

B. The Alert Devices System Cannot Protect EAS from Interruptions.

Contrary to Alert Devices' claims,[42] its system cannot protect the existing EAS system from its transmission overrides. Once again, Alert Devices has not provided specific technical information such as how it will be implemented or when or how it will be tested and thus there is not evidence that such a system would actually work.

Alert Devices recommends "the Commission require an EVSS transmitter to monitor primary EAS stations in the market for the EAS attention signal, to turn off automatically on its receipt, and to remain off for the duration of the EAS transmission."[43] It is unclear to NAB how an EVSS transmitter can monitor, from the vehicle, an EAS attention signal while it is simultaneously transmitting its own signal on the same FM frequency, a signal designed to override the radio broadcast containing the EAS signal. Also, it is entirely unclear what the Alert Devices could monitor. The EAS signal to stations is delivered in a variety of ways, including satellite and microwave transmissions, and stations may transmit emergency information without employing the EAS attention signal. Further, EAS monitor locations occasionally change, such as when a radio studio moves. Absent the Commission implementing a consistently updated database of coordinates of EAS monitor receiver locations, there is simply no method by which Alert Devices can always avoid overriding an EAS transmission. Further, Alert Devices also ignores the fundamental architecture of state and local EAS systems. EAS alerts are both received and transmitted by broadcast stations. Typically, a radio station monitors at least two Local Primary ("LP") stations. If Alert Devices were to override

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[42] *Petition* at 8.

[43] *Id*.

the LP station during an EAS transmission during the data header ("audio attention" signal), the audio portion of the EAS message or the end-of-message signal, the EAS message may not be received and then relayed by a monitoring radio station and would not be heard by the public. Thus, a listener may be in the midst of receiving critical, live-saving details about a tornado's path, when the broadcast is interrupted by notification that a police vehicle is approaching – and other listeners in nearby counties would be deprived of this time-sensitive information because their broadcast station could not monitor the LP station.

Alert Devices' assertion that rules can "ensure that EVSS does not interfere with the public's reception of EAS messages"[44] further underscores its lack of understanding of basic EAS operations. The Commission has given broadcasters great flexibility in warning the public. Part 11 of the Commission's Rules allow a broadcaster, on a voluntary basis, to either activate an EAS alert, interrupt regularly scheduled programming with a news break-in, or incorporate a warning as part of regularly scheduled programming.[45] In an era of instantaneous communications, those in the broadcast audience are provided with a wealth of emergency and critical information through *regular broadcast programming* that dwarfs the information provided through EAS. For example, during the September 11th terrorist attacks, without deploying the EAS system, nearly all stations provided continuous emergency coverage. The Alert

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[44] *Id*.

[45] *See* Amendment of Part 73, Subpart G, of the Commission's Rules Regarding the Emergency Broadcast System, *Report and Order*, 10 FCC Rcd 1786 (1994).

Devices system has no means by which to discern regular programming from detailed emergency information provided over-the-air by radio stations.

Finally, the Alert Devices system also threatens to disrupt the national component of the EAS. Broadcasters are *required* to monitor their designated Primary Entry Point ("PEP") station in the event that the Emergency Action Notification ("EAN") is activated by the President. *See* 47 C.F.R. § 11.43. *Any* disruption of the President's message is contrary to Section 706 of the Communications Act.[46] It is not inconceivable that in the wake of a catastrophic event, the President may try to disseminate a message: at the same time, local police and ambulances are responding to the catastrophic event. Thus, the President's message may be interrupted by numerous Alert Devices transmissions. NAB believes it is critical the Commission to ensure that any future component of a public alert does not degrade or interfere with the primary EAS system of broadcast stations.

C. Alert Devices System May Interfere With the Broadcast of AMBER Alerts.

In the fall of 2001, NAB and the National Center for Missing and Exploited Children launched their promotional campaign *AMBER PLAN: America's Missing: Broadcast Emergency Response –A Law Enforcement and Media Guide*. Named after 9 year-old Amber Hagerman, who was kidnapped and brutally murdered in Arlington, Texas, *AMBER PLAN's* goal is to assist cities and towns with creating their own emergency alert plans for abducted children. The first *AMBER PLAN* was created by broadcasters in 1996 by the Association of Radio Managers with the assistance of law enforcement agencies across the Dallas/Ft. Worth Area. The plan calls for law

[46] Section 706 grants specific, communications-related powers to the president in time of war or national emergency.

enforcement agencies to alert radio and television stations within minutes of a child abduction. Broadcasters and cable systems, in turn, can alert the public of the child's abduction. Because child abduction is often a life or death situation, time is of the essence when trying to rescue an abducted child. Those communities which have already adopted the *AMBER PLAN* typically require the following criteria: the child is a minor, law enforcement has confirmed the child has been *abducted* (and is not merely missing) and the child is in danger of serious bodily harm or death. While the EAS was not originally designed to support child abduction notices, the Commission has allowed state and local government use of the EAS for this purpose. Currently 47 states and 47 cities or counties now have AMBER plans in place, and more than 123 children have been recovered.[47] Were a police officer or other public safety official to inadvertently override a broadcaster's AMBER Alert, there is an inherent risk that listeners may not receive critical details, such as a vehicle description. The Commission must ensure that any public alert does not interfere with state and local AMBER plans.

D. Alert Devices System May Interfere With Broadcasters' Studio Operations.

Most radio broadcasters rely upon their off-air signal, in the studio, to monitor the status of their broadcast transmission. This has proven over time to be the most cost-effective and reliable way in which to ensure that the entire broadcast chain, from the audio input, through the studio and studio-to-transmitter link, through the RF transmission equipment, through the airwaves, and finally through the radio receiver to

[47] *See*, National Center For Missing and Exploited Children, http://www.ncmec.org/missingkids/servlet/PageServlet?LanguageCountry=en_US&PageId=991 (last visited Feb. 12, 2004).

the receiver's output speakers, is functioning properly and sounds just as the broadcaster intends it to sound. This practice stands to be seriously crippled by the advent of a broadcast band EVSS which has the potential to cut this vital monitor signal off entirely (should a broadcaster's off-air receiver actually capture a passing EVSS signal) or render it unusable for extended periods (in situations where the excessive co-channel interference created by an EVSS transmitter renders the off-air signal unusable as a monitor).

Similarly, broadcast remote operations stand to suffer from the interference created by EVSS transmissions. Remote operations often rely upon an off-air signal for "cueing" of talent and to ensure, again, that the broadcast signal chain is function properly. EVSS transmissions could severely undermine a broadcasters' ability to provide vital emergency information to the public because these transmissions would be concentrated at the very locations where remote broadcast operations may be most needed —at the scene of an emergency.

VI. Dedicated Frequency Bands Already Exist For An Emergency Warning System.

The Commission has already established two frequency allocations which offer the potential to more fully address the needs of motorists than does the service proposed by Alert Devices and *without* a potentially devastating impact on radio listening. The first of these, established over 20 years ago under 47 C.F.R. §90.103 (22), sets aside 21.4 GHz "...for the purpose of alerting motorists of hazardous driving conditions and the presence of emergency vehicles." The Safety Warning Service ("SWS") operates in this band, utilizing a transmitter which can generate any of 64 different messages, warning motorists in advance about a wide variety of highway conditions or traffic hazards that lie

ahead. According to ITS America ("ITSA"),[48] SWS receivers are built into most new radar detectors sold today, and have been incorporated into more than 20 million radar detectors produced since 1996.[49]

More recently, the Commission announced on December 17, 2003 its adoption of licensing and service rules for the 5.9 GHz band (5.850-5.925 GHz band) for Dedicated Short-Range Communications ("DSRC") in the Intelligent Transportation Systems ("ITS") Radio Service.[50] DSRC systems will provide a short-range, wireless link to transfer information between vehicles traveling at high speeds and roadside units or other vehicles. The full text of the Commission's Report on this new service has not yet been publicly released; however, it is anticipated that it will rely heavily on recommendations made by ITSA in a comprehensive document submitted to the Commission in July 2002.[51]

The July 2002 ITSA submission culminated an ITSA effort to establish a recommendation for licensing and service rules for DSRC operations based upon a

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[48] ITS America is a not-for-profit, 501(c)(3) organization, established in 1991 to coordinate the development and deployment of ITS in the United States, and also serves as a Federal Advisory Committee to the Department of Transportation on ITS matters. *See* http://www.itsa.org (last visited Feb. 12, 2004).

[49] *See* ITS America Press Release, 4/2/02, on the Internet at http://www.itsa.org/ITSNEWS.NSF/0/dbcb7695f82120cb85256b8f00732994?OpenDocument. (last visited Feb. 12, 2004).

[50] FCC News Release, FCC Adopts Rules for Intelligent Transportation Systems To Advance Homeland Security and Traveler Safety, WT Docket No 01-90, rel. Dec. 17, 2003.

[51] *See* "Ex Parte Comments of the Intelligent Transportation Society of America: Status Report and Recommendations for Licensing and Service Rules for the DSRC Spectrum in the 5850-5925 MHz Band," ITS America, WT Docket No. 01-90, July 9, 2002.

consensus of the ITS community. Public safety applications figure prominently in the ITSA report where it is noted that:

> the 5.9 GHz Band will permit public safety entities to communicate directly with the public in ways not previously available. For example, warning messages about road conditions or soon-to-arrive emergency vehicles can be sent to multiple vehicles approaching a congested area or the scene of an accident. These messages will be able to reach large numbers of private vehicles unaffiliated with any public safety entity.[52]

Additionally a large list of public-safety applications which can be served by a DSRC service were presented including[53]

- Probe Data Collection
- Toll Collection
- In-Vehicle Signing, including:
- Work Zone Warning
- Highway/Rail Intersection Warning
- Road Condition Warning
- Rollover Warning
- Main Screening
- On-Board Safety Data Transfer
- Driver's Daily Log
- Transit Vehicle Data Transfer (gate and yard)
- Emergency Vehicle Video Relay
- Traffic Information
- Intersection Avoidance
- Vehicle-to Vehicle, including:
- Vehicle Stopped or Slowing
- Vehicle/Vehicle Collision Avoidance
- Imminent Collision Warning
- Low Bridge Warning
- Border Clearance
- Commercial Vehicle Operations (CVO)
- Vehicle Safety Inspection
- Transit Vehicle Signal Priority
- Emergency Vehicle Approach Warning

ITSA indicates that "...a goal of the ITS community is to have all vehicles—passenger cars, commercial trucks, transit buses, etc.—manufactured and sold in the United States be equipped with a DSRC On-Board Unit."[54] In establishing this new

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[52] *Id*. at 39.

[53] *Id*. at 24.

[54] *Id*. at 53.

service, the Commission has embarked upon a course for establishing a universal EVSS, broad in scope and with the potential to ultimately reach each and every vehicle, in contrast to the narrowly focused (*i.e.*, emergency vehicle warnings only) radio broadcast band proposed in the instant *Petition.* Thus, the Commission should not adopt the Alert Devices proposal because it is duplicative and less effective than current public warning efforts.

VII. Conclusion.

Alert Devices' system is both overinclusive and underinclusive because it cannot notify motorists not currently tuned into AM or FM radio, is likely to interfere with non-motorists use of free-over-the-air radio, and may threaten the viability of EAS and broadcasters' dissemination of other life-saving emergency information. NAB strongly urges the Commission to require Alert Devices to immediately cease sales of its transmitting device, which is currently available on an unlicensed basis to any person or entity wishing to override terrestrial broadcast signals in a given area. Finally, the Commission has already allocated the 5.9 GHz spectrum for a wide-range of emergency

warnings; thus, any emergency warning system should appropriately be allocated in that spectrum. For the reasons stated above, Alert Devices' *Petition* for Rulemaking must be denied.

Respectively submitted,

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