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June 14, 2001

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JUN 14 2001

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**VIA HAND DELIVERY**

Ms. Magalie Roman Salas, Esq.  
Secretary  
Federal Communications Commission  
445 12th Street, S.W.  
Room TW-B204  
Washington, D.C. 20554

Re: **EX PARTE**  
In the Matter of the Commission's Rules to Ensure Compatibility with  
Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102. /

Dear Ms. Salas:

On Wednesday, June 13, 2001, Dennis Kahan, Chief Executive Officer of SigmaOne Communications Corporation ("SigmaOne"), Sandy Mayer, Vice President of Corporate Development and Technology for SigmaOne, and I met with: (1) Commissioner Michael J. Copps and Jordan Goldstein; (2) Patrick Forster, Daniel Grosh, Blaise Scinto, Martin Liebman, and Jennifer Tomchin; and (3) Peter Tenhula and Jason Goldman. At those meetings, Sigma One emphasized its opposition to AT&T's waiver request to delay deployment of E-911 Phase II.

In accordance with Section 1.1206 of the Commission's rules, an original and a copy of this letter, and the associated attachment, are being submitted. Please contact the undersigned if there are any questions in connection with this matter.

Sincerely,



Henry M. Rivera  
Counsel to SigmaOne Communications Corporation

**SHOOK, HARDY & BACON LLP**

cc: Commissioner Copps  
Jordan Goldstein  
Patrick Forster  
Daniel Grosh  
Blaise Scinto  
Jennifer Tomchin  
Peter Tenhula  
Jason Goldman  
Martin Liebman



Comments on  
AT&T Wireless Services  
Request For Waiver

Presented to  
Federal Communications Commission

June 13-14, 2001

# Agenda

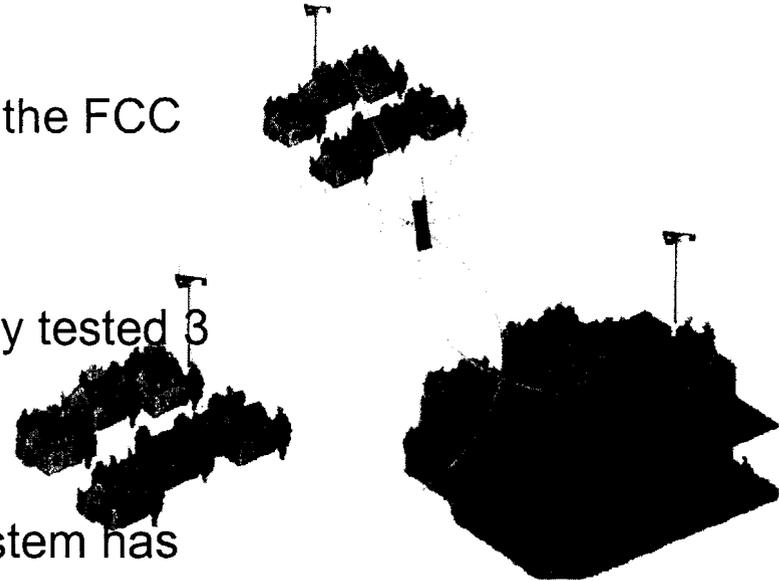
- In Conclusion ....
- Technology Overview
- Carrier Audited AMPS/TDMA Field Trials
- AT&T Request for Waiver – Issues
- Limitations of RSSI/MAHO Location Determination
- What's the Point?

## In Conclusion...

- The FCC ruling on AT&T waiver will set the tone for E-911 Phase II for the next five years
  
- Rule Very Quickly and Very Decisively
  
- Two Options
  - Permit carriers to delay deployment of E-911 Phase II
  - Rule that carriers must deploy – no “ifs”, “ands” or “buts”

# Systems available for Commercial Deployment

- ❑ SigmaOne uses both Angle of Arrival (“AOA”) and Time Difference of Arrival (“TDOA”) to support AMPS/TDMA location
- ❑ AOA/TDOA combination required to meet the FCC requirements for accuracy and availability
- ❑ SigmaOne has developed and successfully tested 3 generations of wireless location systems
- ❑ Sigma5000 AMPS/TDMA beta system system has been successfully tested with major U.S. carriers



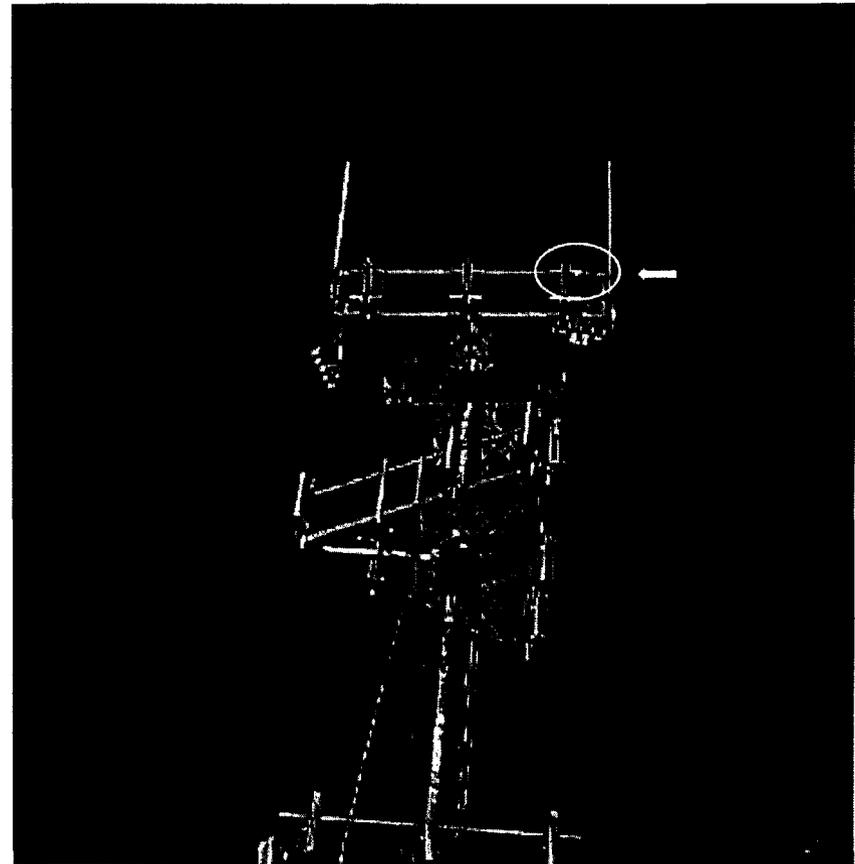
# SigmaOne Carrier Audited Trials

- Suburban, Urban, Rural
- Indoor and Outdoor Testing
- Stationary and Mobile Testing
- Conducted March, July and December, 2000

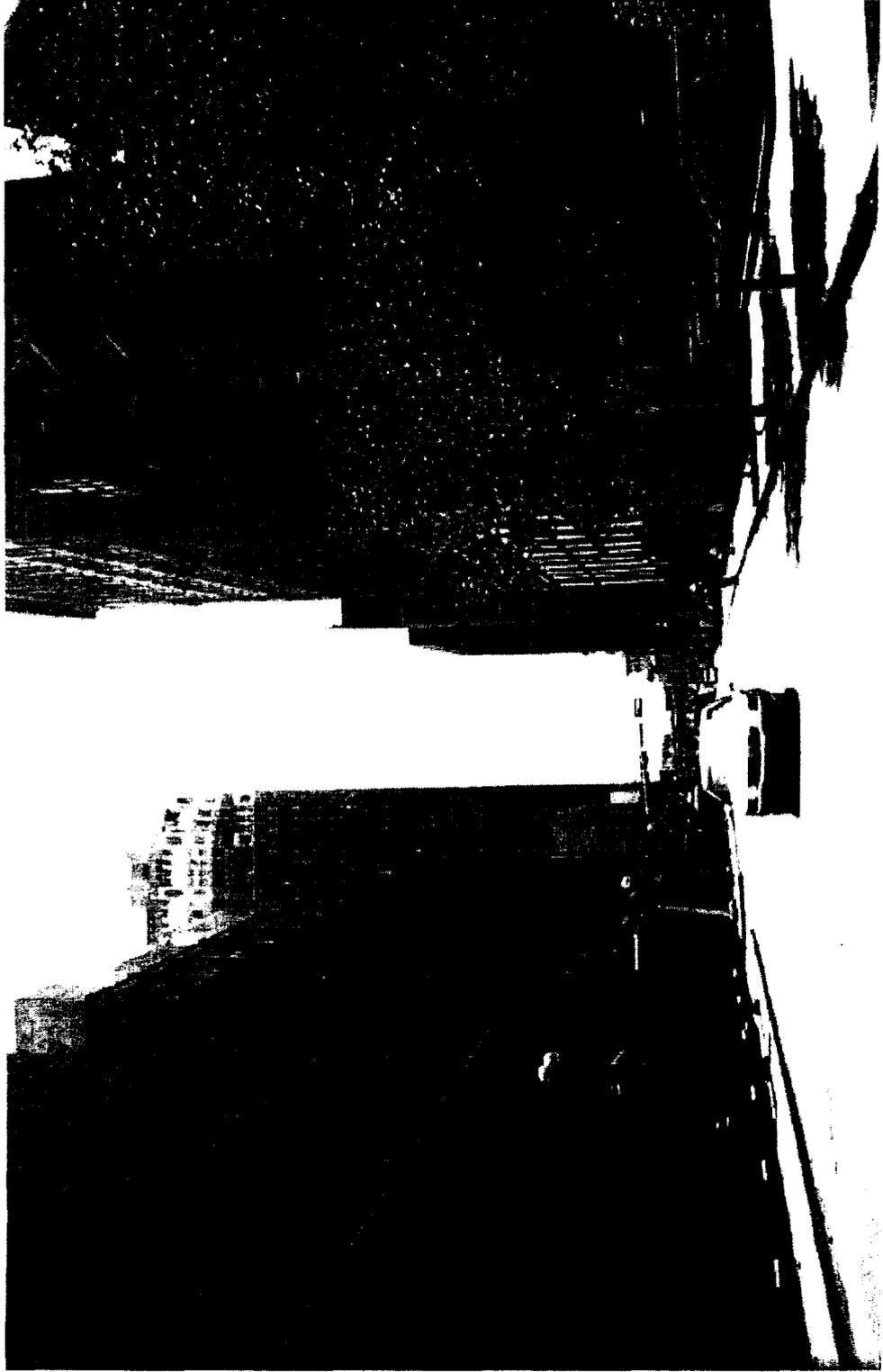


# SigmaOne AOA Antenna Array

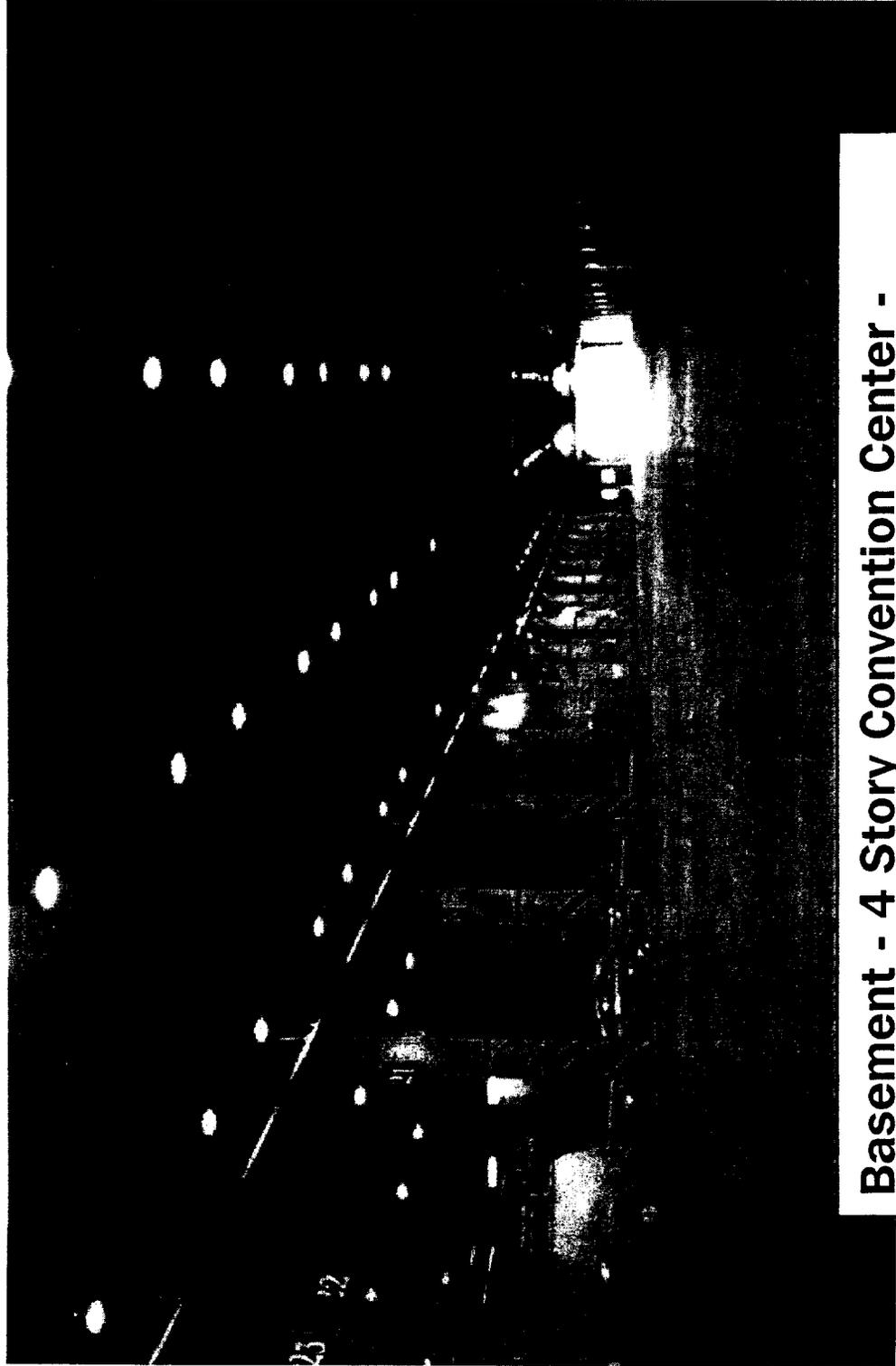
- ❑ SigmaOne's antenna array (encircled) is very small
- ❑ 1/6th the size of that quoted by AT&T
- ❑ Minimal zoning impact



# Urban Canyon Field Trial



# Carrier Audited Downtown Trial



**Basement - 4 Story Convention Center -  
70 m - 67% ; 100m - 100%**

# Carrier Audited Trial Summary

Network/Error	Suburban	Urban	Rural	COMPILED <sup>1</sup>
<b>TDMA - 67%</b>	85 m	140 m	255 m	<b>110 m</b>
<b>TDMA - 95%</b>	175 m	314 m	582 m	<b>236 m</b>
<b>AMPS - 67%</b>	95 m	125 m	247 m	<b>114.7 m</b>
<b>AMPS - 95%</b>	200 m	321 m	556 m	<b>254 m</b>

*1 – Data assumption is 75% of calls suburban, 15% urban, 10% rural*

# Carrier Audited Trial Summary – Using Improved Algorithm for Rural Data

Network/Error	Suburban	Urban	Rural	COMPILED
<b>TDMA - 67%</b>	85 m	140 m	145 m	99 m
<b>TDMA - 95%</b>	175 m	314 m	434 m	232 m
<b>AMPS - 67%</b>	95 m	125 m	194 m	109 m
<b>AMPS - 95%</b>	200 m	321 m	380 m	236 m

*1 – Data assumption is 75% of calls suburban, 15% urban, 10% rural*

# AT&T Wireless Request for Waiver (TDMA/AMPS) Has Significant Issues

- ❑ AT&T has not provided a concrete roadmap to full and timely compliance
  - AT&T must transfer all current subscribers to GSM to comply
  - Overlaying a GSM system does not solve TDMA or AMPS subscriber problem
  
- ❑ AT&T MNLS accuracy claims have limited theoretical basis
  - Proposed solution extremely inaccurate for TDMA
  - Proposed solution will be non-existent for AMPS
  
- ❑ AT&T MNLS - Network comparisons are Incorrect
  - AT&T filed its waiver request prior to obtaining substantive proof for its MNLS accuracy claim
  - Hypothetical claims must not be compared to real world results

# AT&T Wireless Request for Waiver (TDMA/AMPS) Has Significant Issues

- MNLS implementation risk –
  - No AT&T infrastructure vendor supports the accuracy or deployment schedule claims of AT&T
  - Technology is not mature – and will require at least 2 - 3 years of development effort
  
- Impact associated with any additional antenna installations are negligible and constraints on zoning are minimal
  - SigmaOne AOA Antenna Array – 1/6th the size of AT&T claim

# AT&T Wireless Request for Waiver (TDMA/AMPS) Has Significant Issues

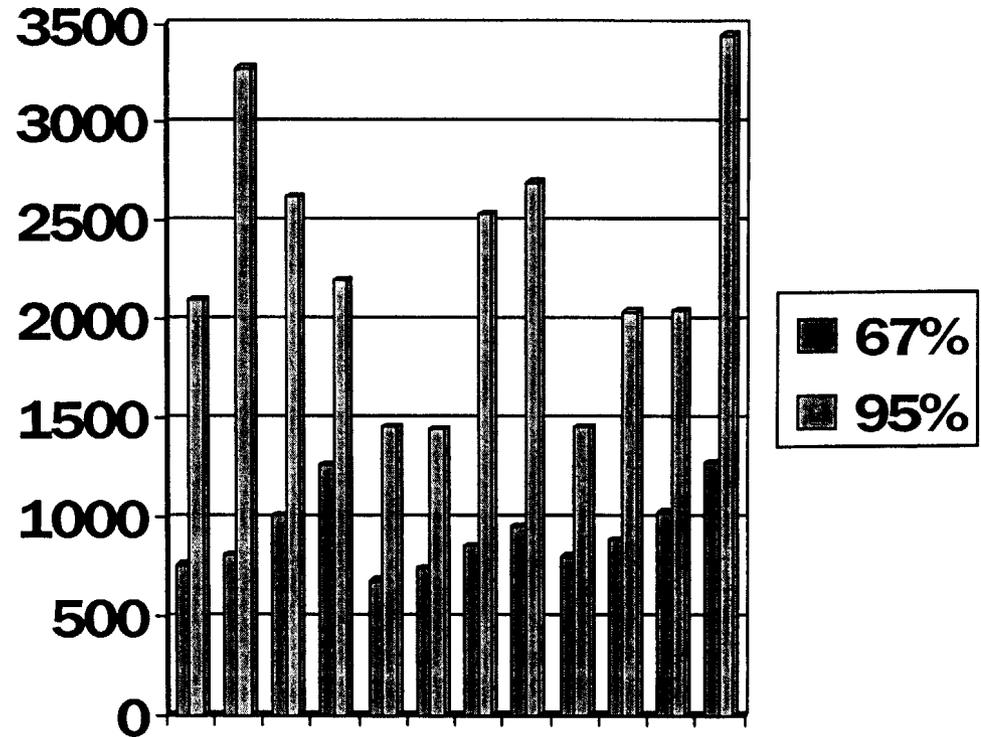
- ❑ AT&T's claim of similarity with VoiceStream's approved waiver is misstated.
  - VoiceStream has committed to a detailed roadmap
  - NSS is a short-term measure (E-OTD will be a final, compliant measure)
- ❑ AT&T need not deploy multiple location systems as it overlays GSM
  - Network based systems can support multiple air-interfaces through remotely downloadable software changes
- ❑ Compliant network solutions are available today – As shown in tests conducted by NENA and SigmaOne's carrier audited test results

# RSSI/MAHO Based Geolocation Methods

- Universally recognized as the most primitive method for location
- Path loss errors can be caused by antenna polarization, seasonal effects, fading caused by scattering rays from both near and far reflective objects, elevation above terrain, and interference from other signals in same or near-by cells.
- MAHO/RSSI – Not available for AMPS initiated calls

# SigmaOne MAHO Field Test Results

- 12 Test Set-Ups
- Variety of Locations and Scenarios
- Summary of Test Results
  - 922 meters – 67%
  - 2112 meters – 95%



## What's the Point?

- The ruling must be definitive and unequivocal
- If the endless cycle of notices, meetings, hearings, petitions for reconsideration, clarifications and new rulings is to be broken, there can be **NO** loopholes that permit delay, postponement or procrastination
- Firm contracts between a carrier and a vendor are the best evidence that real world deployments will take place
- Granting all or any part of the AT&T waiver will open the floodgates