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SEP 27 2001

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington DC 20

Re: Ex Parte Presentation in CC Docket No. 94-102

Dear Ms. Salas

Jock Christie and I met with Ms. Monica Desai of Commissioner Copps' office this morning. We reviewed the attached material. We also provided Ms. Desai with our prior presentation dated June 12, 2001, to the Wireless Bureau. This was previously submitted electronically to the record.

Sincerely,

Scott J. Rafferty
Senior Director
Business Development

10-20-01
10-20-01



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Ms. Magalie Roman Salas
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445 12th Street, S.W.
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Re: Ex Parte Presentation in CC Docket No. 94-102

Dear Ms. Salas

I met with Blaise Scinto, Pat Forster, Don Grosh, and Marty Liebman of the Wireless Bureau on June 5, 2001. The meeting reviewed the status of GPS technology and its ability to fulfill the Commission's mandate that mobile phones provide location information to emergency personnel. SiRF cannot disclose the specifics of its business relationships with manufacturers and carriers and does not wish to comment upon specific waiver requests that are under consideration. Except in cases where others have identified SiRF in the Commission's public record, SiRF's arguments were general in nature.

In the five years since the Commission's original order, SiRF has reduced the size of its chip by 97 percent and its power consumption by 95 percent. The chip is compatible with the size and power restrictions imposed by mobile phones and can function over any air interface. A Finnish carrier has produced and marketed a mobile phone using SiRF's chip with the GSM air interface and incorporating network assistance. An American customer has incorporated SiRF technology into a battery pack that can retrofit phones of a style that has been produced for several air interfaces. (However, this application does not incorporate network assistance or high-sensitivity software.)

SiRF denied the suggestion that it would be appropriate to delay progress toward the E911 mandate while the technology "catches up." The technology is here today, but materials recently disclosed by the Commission suggests that some carriers may not have initiated orders either for SiRF chips or any other technology that could reasonably be expected to comply with the mandate.

During the past two weeks, the Commission has published two previously undisclosed independent studies performed for carriers. On October 25, 1999, almost

two years before the deadline for initial compliance, a study performed by Lockheed Martin concluded that network-assisted GPS was the only stand-alone technology capable of complying with the mandate. The same study concluded that network-assisted GPS was "cost effective." In March 2000, a second study performed by Technocom confirmed that network assisted GPS complied with the mandate. On August 18, 2000, fourteen months before the deadline, Motorola, Nokia and Ericsson publicly advised the Commission (and carriers) that "a production volume handset cannot be provided sooner than 18 months after delivery of an actual volume commitment from a [carrier]." Nextel did make a commitment and has sought a delay reflecting the critical path implied by development, production, and network testing.

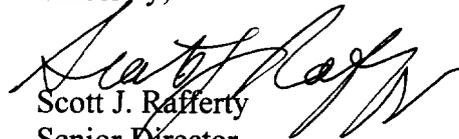
Since October 1999, the date of the Lockheed Martin study, SiRF has developed high-sensitivity software and substantially reduced the size, power requirement, and cost of its chip. Over the next two years, integration of SiRF circuitry and intellectual property onto the main board will further unit costs to as low as \$10, depending on volumes. If orders are not placed, however, SiRF, its competitors, and the handset manufacturers that are its customers cannot reasonably be expected to continue these development programs. If major carriers failed to commit to handset technologies – or if they affirmatively reject compliant technologies, manufacturers will be reluctant to produce handsets, even if smaller carriers acted in good faith to obtain them to comply with the mandate.

Waivers extending the timeframe for compliance should only be considered if the carrier commits to the acquisition of specific technology that complies with the mandate. The Commission should allow the marketplace to decide whether a carrier selects SiRF or another competitor using network-assisted GPS. However, the Commission should not relax the accuracy requirements. SiRF and its competitor provide the accuracy required by the standard and do so in a manner that a carrier's own study admits was already "cost effective" in 1999 and has since fallen considerably in cost.

SiRF also observed that location information only accurate to 750 meters includes almost 20 million square feet and would not be useful for emergency dispatchers. If one or more major carriers was allowed to provide information of such low precision, emergency authorities could not reasonably be expected to make the investments necessary to support a "bona fide request." As a result, an accuracy waiver – even for a single carrier – could rapidly induce the collapse of the entire E911 program.

I regret the delay in submitting this notice, which resulted from unanticipated travel requirements.

Sincerely,


Scott J. Rafferty
Senior Director
Business Development

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Meeting the Challenge of Implementing E911

SiRF Technology, Inc.

148 E. Brokaw Road
San Jose CA 95112
(408)-392-8453

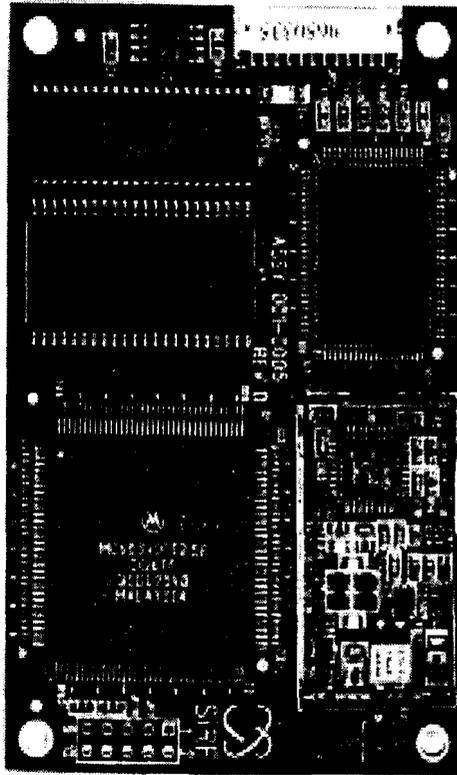


SiRF GPS saves lives by giving a mobile phone's location to E911 personnel.

- SiRF has met the challenge of making GPS portable, accurate, and reliable enough to use in mobile phones and other consumer devices.
- SiRF's technology is cost-effective.
- Aided GPS is the only single technology that complies with the E-911 mandate.
- The variety of products already available shows that, if carriers place orders, manufacturers can produce GPS handsets to comply with the E-911 mandate.

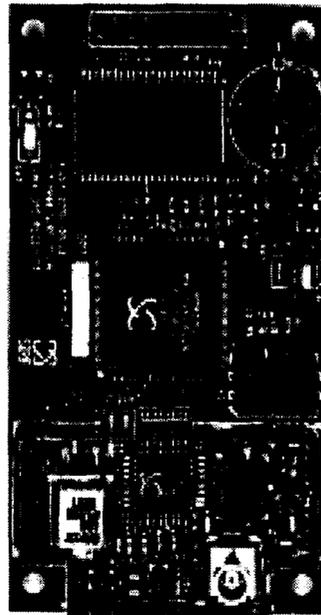


On June 12, 1996, the FCC set five years as the deadline to make cellphone 911 location-aware.
SiRF-designed chips met this challenge.

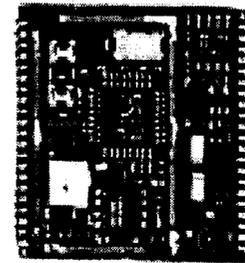


1997

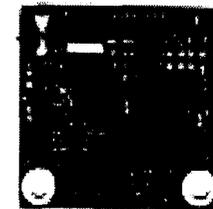
 1W
100m
5cm x 7cm x .6cm
SiRF



1998



1999



2000



2001

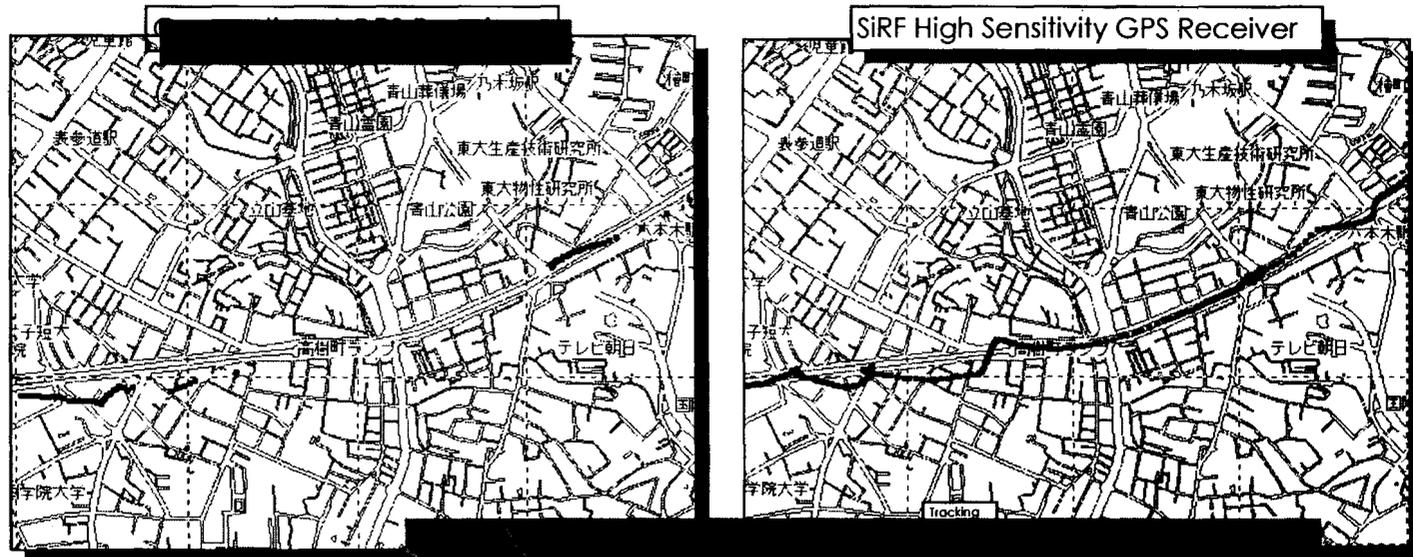
50mW
1-3m
1cm x 1.4cm x .4cm

Even before SiRF's high-sensitivity receiver, AT&T and Nextel found that aided GPS met the FCC mandate.

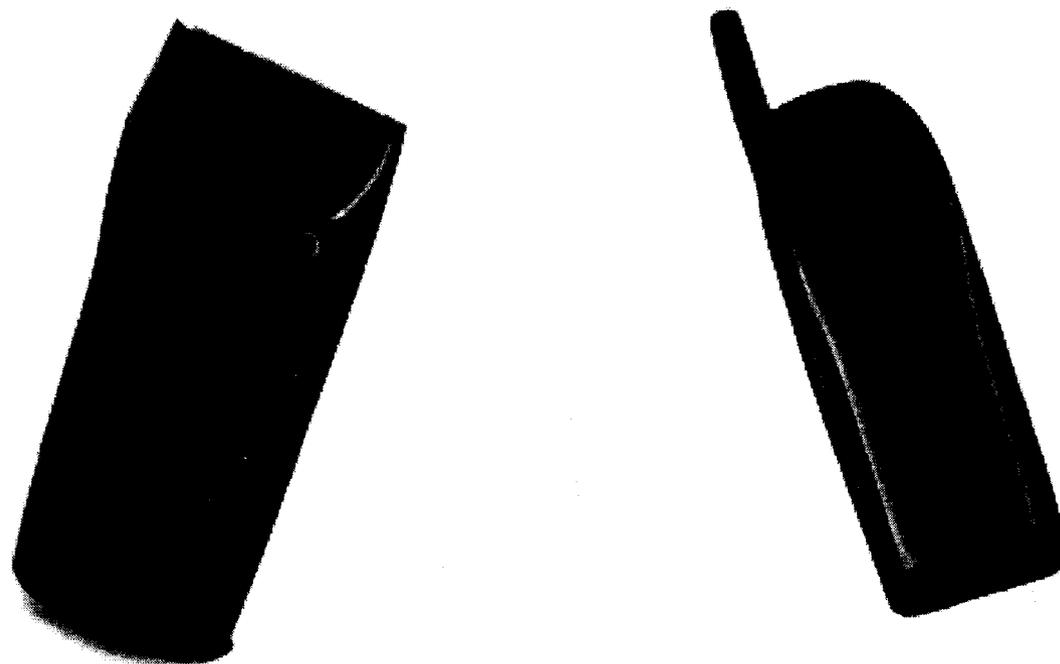
- Lockheed Martin study for AT&T (10/25/99):
“The only stand-alone technology that will meet the performance requirements in all coverage areas (with the ‘possible’ exception of in-building) is a GPS network assisted solution.”
- Technocom study for Nextel (3/00): “Outdoor tests, whether stationary or mobile, had 100% yield.... For stationary points..., the 67 and 95 percentiles were 19.9 meters and 62.4 meters.”



High sensitivity makes it possible to obtain a fast fix in challenging environments.



SiRF GPS is available as a battery-pack accessory for use with Nokia phones using GSM, TDMA, or CDMA. (Airbiquity)



(does not include high-sensitivity software or aiding)



SiRF GPS is available for GSM phones in Finland. (Benefon)



(includes aiding)



Nextel has shown the FCC a prototype phone built by Motorola for iDEN.



GPS Digital Circuitry



US Cellular has told the FCC that GPS phones for TDMA are in development.

- USCC 11/9/00 – “Based on responses to recent inquiries made by USCC, Nokia, Motorola, Audiovox, and Ericsson expect to manufacture phase II compliant handsets for TDMA and CDMA systems.... Nokia has informally indicated that it plans to have a GPS equipped handset on the market by the second half of 2001.”



AT&T has told the FCC that aided GPS is cost-effective.

- “GPS – network assisted [is a] viable technology in terms of coverage and accuracy.

- Good coverage and accuracy in all areas with the possible exception of in-building

- Relatively simple to implement

- **Cost effective**

- Frequency insensitive

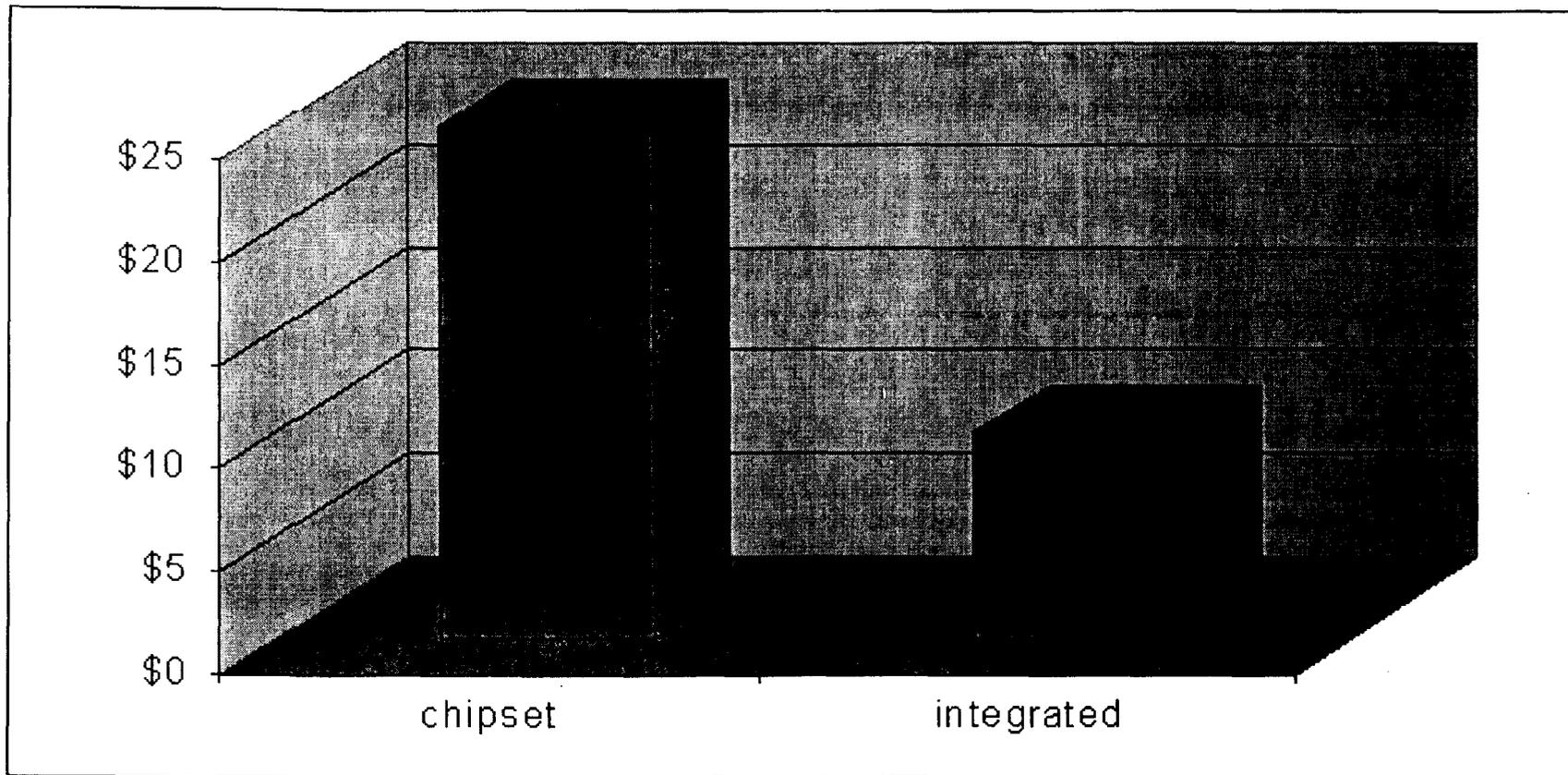
- Air interface insensitive (except for data transport)”

Lockheed-Martin evaluation for AT&T (at 12), unsealed

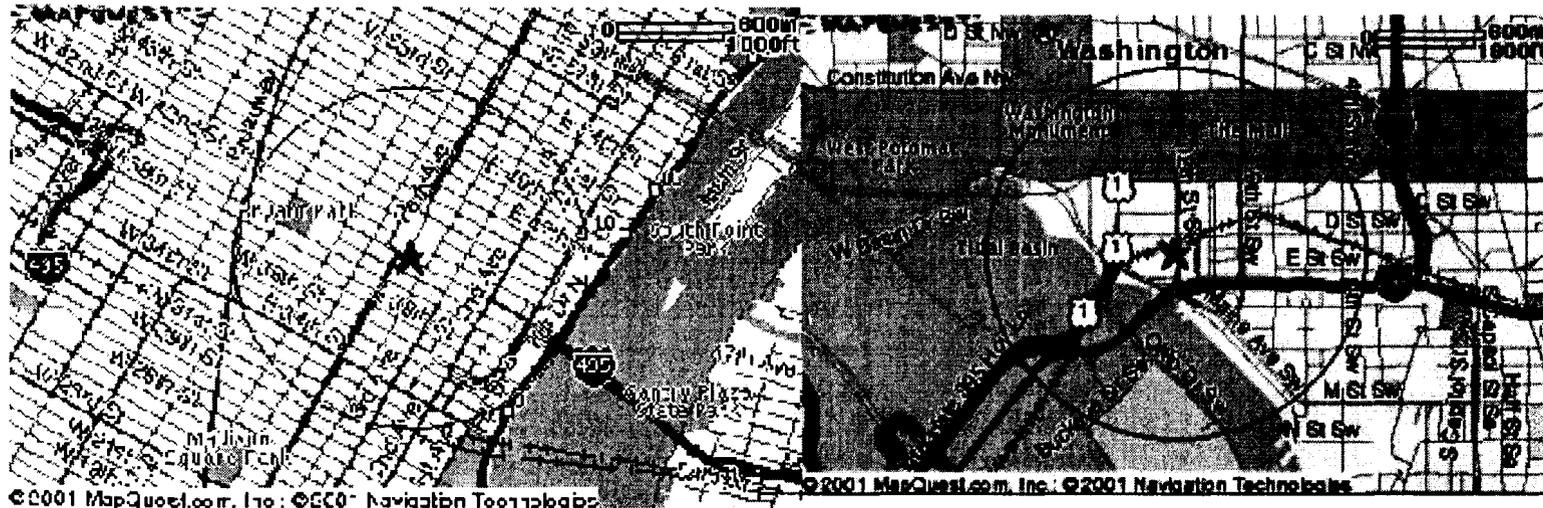
5/30/01



- As manufacturers integrate SiRF technology into mobile phone baseboard chips, costs will fall even more.



- Broad accuracy waivers will prevent E911 from dispatching help to the users' location.

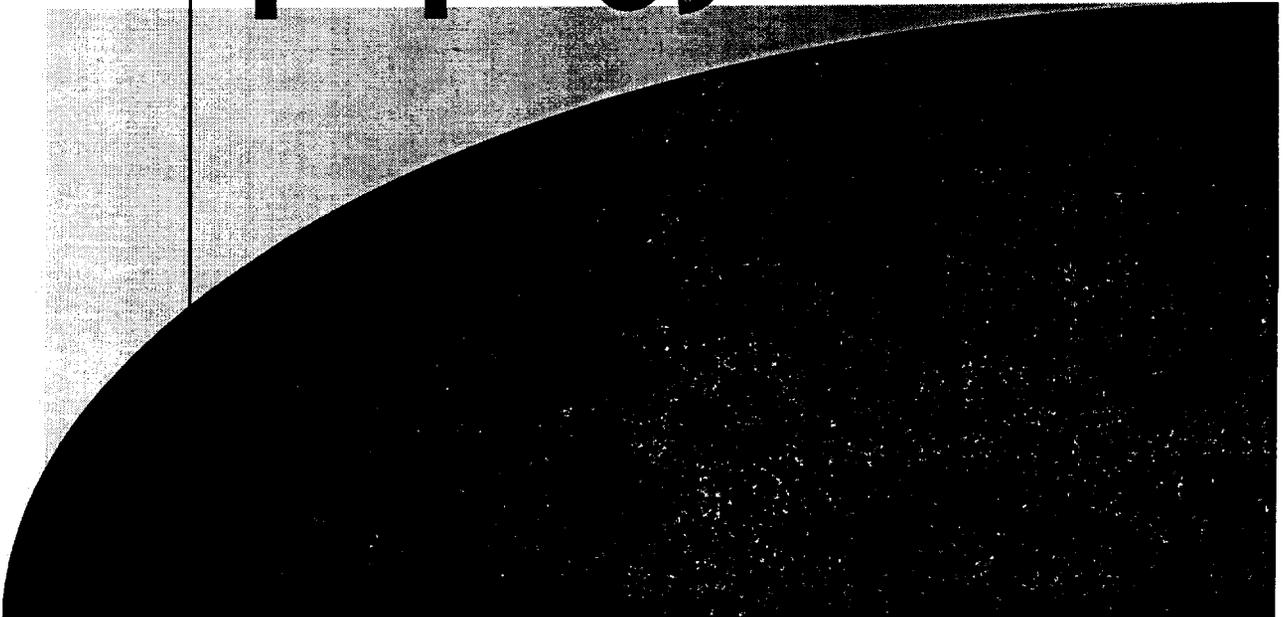


A 750-meter radius includes seven times the area of Disneyland.

Time waivers will delay E911; accuracy waivers will destroy it.

- Carriers who specify and order GPS handsets can obtain handsets and implement service within 12 – 18 months.
- Accuracy waivers will have a “snowball” effect
 - Other carriers may seek waivers
 - Manufacturers will stop producing handsets
 - Limited penetration will discourage E911 authorities from investing in links needed to make a “bona fide request”





**THE NEED TO
TEST E911
SOLUTIONS**

SiRF Technology

Traxsis

Summary

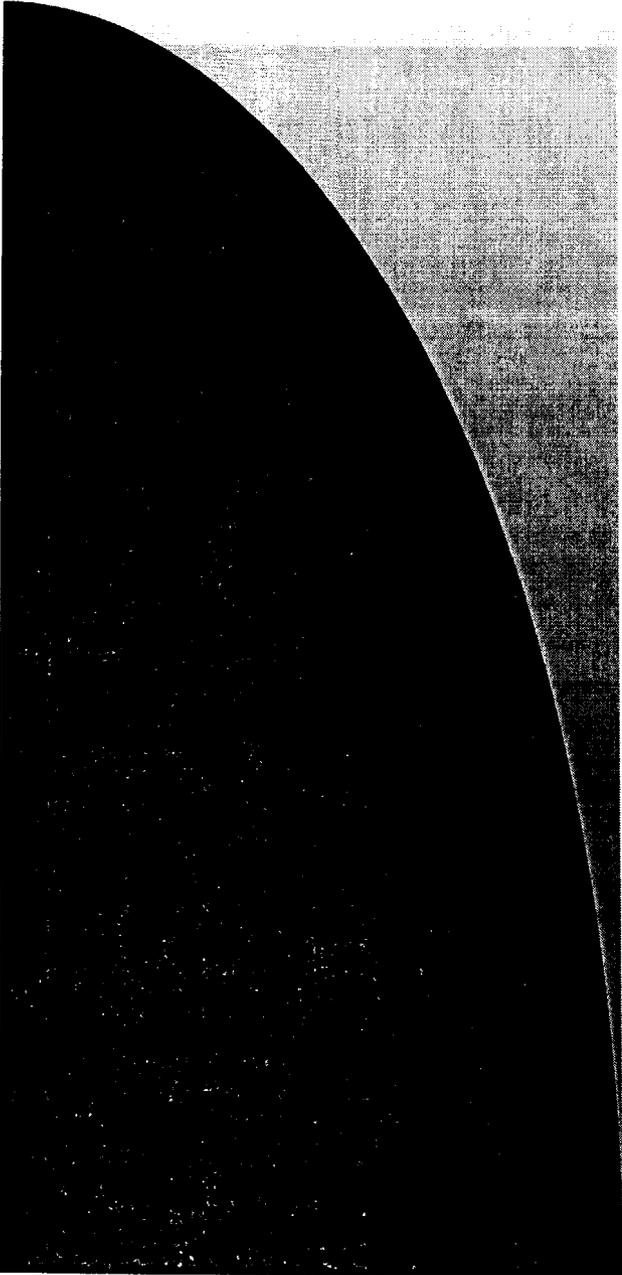
- No carrier expects to be fully compliant by Oct. 1
 - ◆ Some CDMA delays may be brief
- Delay waivers may be inevitable, but should be conditioned upon a clear program to deploy an accurate E911 solution
- Accuracy waivers are inappropriate because reliable solutions exist

How did we get here?

- Carriers ordinarily specify server and handset technologies and contract resources needed to deploy desired feature
- Never before has a complex feature requiring integration of network and handset been built “on spec” without a carrier order
- Major carriers have not conducted open and comprehensive tests of all technologies – including AGPS
- Sudden changes in air interface (eg, TDMA to GSM) have made it even more difficult to design “on spec”
- Waivers have been filed – and radically amended – shortly before final deadline ³

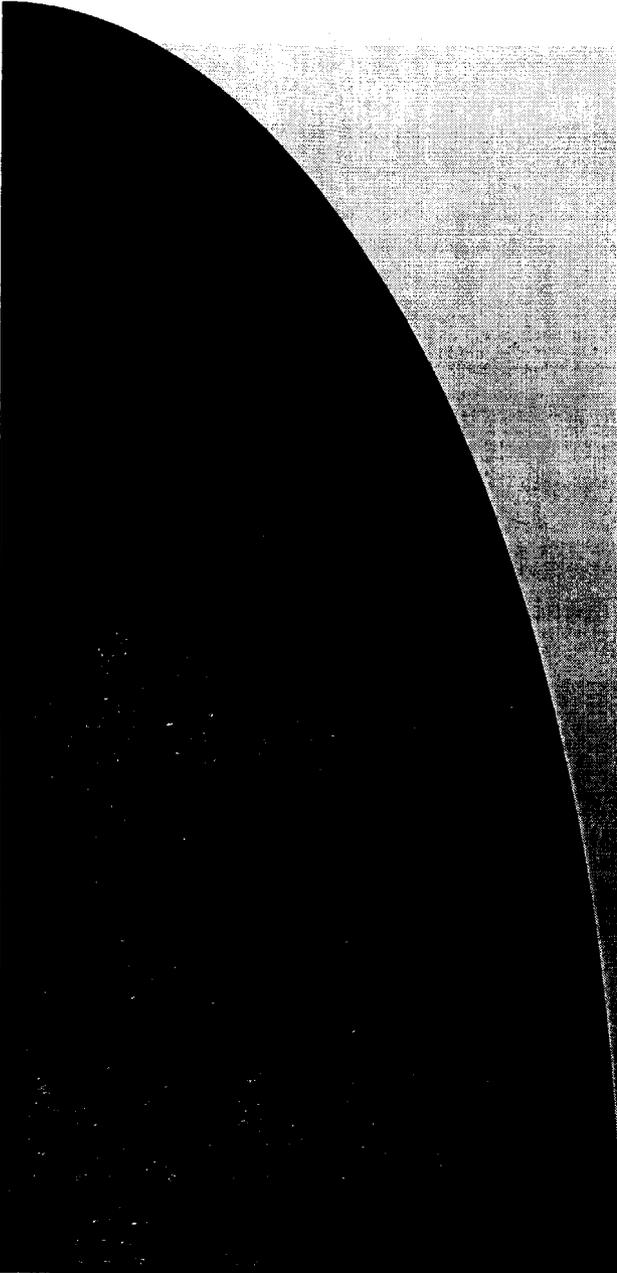
The Need for Fair Testing

- FCC expectations are unclear –
 - ◆ urban calls only 1-6%
 - ◆ E911 need not work in high-rises and where cellular signal is not available
- Assumption that EODT “only feasible solution” for GSM not well-founded
 - ◆ No data showing accuracy compliance of EODT
 - ◆ No data showing AGPS non-compliant
- Supplier data self-serving, inconsistent
- Carrier data uneven and incomplete
 - ◆ No GSM carrier has evaluated handset-based GPS
 - ◆ One dismissed GPS with an unsupported claim that it did not work inside



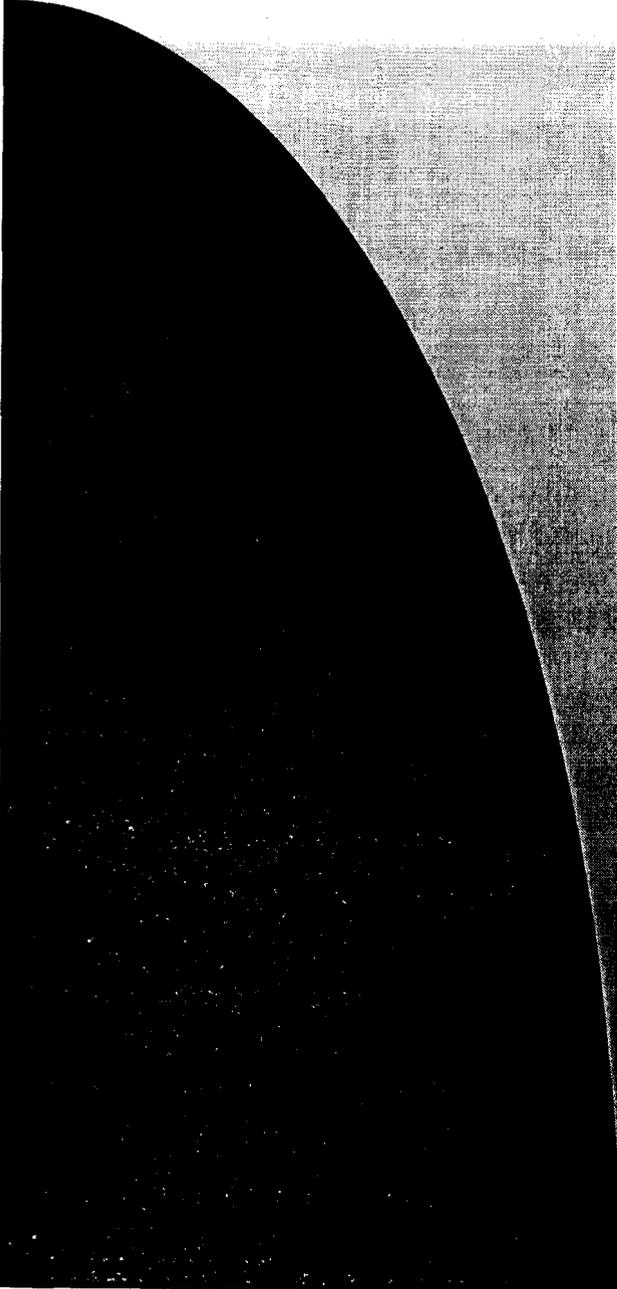
GPS and 95% accuracy

- Network-centric GPS is highly accurate when a fix can be obtained
- Highly accurate even when cell sites are aligned (highways)
- Most E911 calls are vehicular – and these callers often do not communicate accurate location information
- GPS also excels in remote areas and foliage (e.g., urban parks) where there are few landmarks
- Assuming GPS has a 97% yield in non-urban areas and a 50% yield in urban areas, overall yield is over 95%



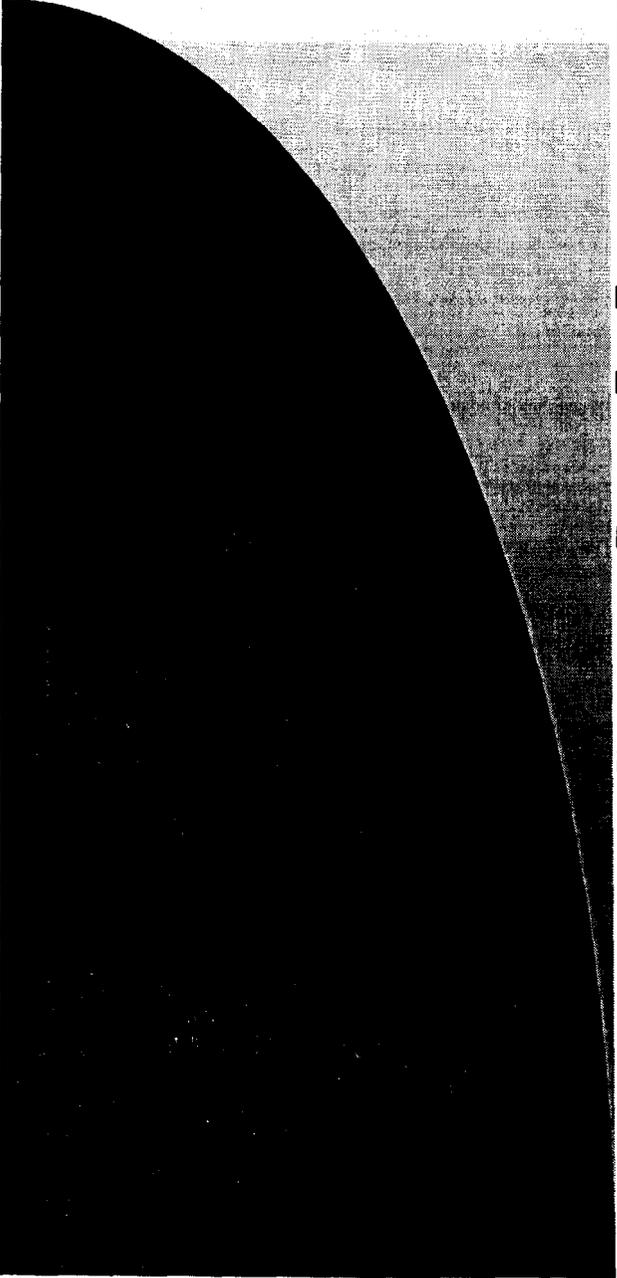
Better guidance and a uniform testing protocol is essential

- Standard testing protocol and independent reporting
- Need for clear categories and weights
 - ◆ High-rise indoor
 - ◆ Urban canyon
 - ◆ Residential (inside and neighborhood)
 - ◆ Road (urban street, suburban street, freeway, rural highway)
 - ◆ Remote areas (with and without foliage) where reliable cellular service is available



Weights should reflect...

- Historical E911 calling distribution
- Historical inability to ascertain location
 - ◆ Fast-moving subject (e.g., vehicle)
 - ◆ Absence of landmarks (e.g., park, highway)
 - ◆ Likelihood of caller interruption or failure to communicate location effectively (e.g., crime in progress, driver distraction or error)



Need to Defer Any Definite Waiver

- Three months to do a real “bake-off”
- Involve DOT because most mobile 911 calls are vehicular
- Empower customer choice – label any cellphones that do not meet accuracy standard
- Don’t accept guarantees and promises – require carriers to fund development of a backup technology that does meet accuracy requirements, so it can be quickly deployed in event of failure