

**DEPARTMENT OF HOMELAND SECURITY**  
**INTERFERENCE DETECTION MITIGATION (IDM)**  
**VIGILANCE ~ SAFEGUARDING AMERICA**

**DHS Position, Navigation & Timing (PNT)**  
**Program Management Office**  
**John Merrill – Program Manager**

**CGSIC September 2012**



# Agenda

- **Governance**
- **Existing and Emerging Threats**
- **Critical Infrastructure Interdependencies**
- **Patriot Watch Architecture**
- **Public Outreach – Collaboration with other Agencies**
- **Conclusions**



# Interference Detection & Mitigation (IDM) per NSPD 39

U.S. SPACE-BASED POSITIONING, NAVIGATION, AND TIMING POLICY

December 15, 2004

FACT SHEET

The President authorized a new national policy on December 8, 2003, that establishes the vision and implementation actions for space-based positioning, navigation, and timing programs, augmentations, and activities for U.S. national and homeland security, civil, scientific, and commercial purposes. This policy supersedes Presidential Decision Directive/National Security and Technology Council-6, U.S. Global Positioning System Policy, dated March 28, 1996.

## I. Scope and Definitions

This policy provides guidance for: (1) development, acquisition, operation, sustainment, and modernization of the Global Positioning System and U.S.-developed, owned and/or operated systems used to augment or otherwise improve the Global Positioning System and/or other space-based positioning, navigation, and timing signals; (2) development, deployment, sustainment, and modernization of capabilities to protect U.S. and allied access to the Global Positioning System for national, homeland, and economic security, and to deny adversaries access to any space-based positioning, navigation, and timing services; and (3) foreign access to the Global Positioning System and United States Government augmentations, and international cooperation with foreign space-based positioning, navigation, and timing services, including augmentations.

For purposes of this document:

- "Interoperable" refers to the ability of civil U.S. and foreign space-based positioning, navigation, and timing services to be used together to provide better capabilities at the user level than would be achieved by relying solely on one service or signal;
- "Compatible" refers to the ability of U.S. and foreign space-based positioning, navigation, and timing services to be used separately or together without interfering with each individual service or signal, and without adversely affecting navigation warfare; and
- "Augmentation" refers to space and/or ground-based systems that provide users of space-based positioning, navigation, and timing signals with additional information that enables

augmentations, and deny adversary access to any space-based positioning, navigation, and timing services, particularly including services that are openly available and can be readily used by adversaries and/or terrorists to threaten the security of the United States. In addition, the diverse requirements for and multiple applications of space-based positioning, navigation, and timing services require stable yet flexible policies and management mechanisms. The existing management mechanisms for the Global Positioning System and its augmentations must be modified to accommodate multi-use applications and program planning, resource allocation, system development, and operations. Therefore, the United States Government must improve the policy and management framework governing the system worldwide;

- Maintain the Global Positioning System as a component of multiple sectors of the U.S. Critical Infrastructure, consistent with Homeland Security Presidential Directive-7, Critical Infrastructure Identification, Prioritization, and Protection, dated December 17, 2003;
- Encourage foreign development of positioning, navigation, and timing services and systems based on the Global Positioning System. Seek to ensure that foreign space-based positioning, navigation, and timing systems are interoperable with the civil services of the Global Positioning System and its augmentations in order to benefit civil, commercial, and scientific users worldwide.

## Identify

## Analyze

## Locate

## Attribute

## Mitigate

system has grown into a global utility whose multi-sector use is critical to economic growth, transportation safety, and the worldwide economic infrastructure. In the face of the increasing importance of the Global Positioning System, the deliberate degradation or denial of its accuracy, availability, integrity, and timing and alerting capabilities for critical

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Global Positioning System presents a significant challenge to the security of the United States. The system is inherently vulnerable to attack, and its use is critical to the security of the United States. In addition, the diverse requirements for and multiple applications of space-based positioning, navigation, and timing services require stable yet flexible policies and management mechanisms. The existing management mechanisms for the Global Positioning System and its augmentations must be modified to accommodate multi-use applications and program planning, resource allocation, system development, and operations. Therefore, the United States Government must improve the policy and management framework governing the system worldwide;

maintain the Global Positioning System, and its augmentations, and deny adversary access to any space-based positioning, navigation, and timing services, particularly including services that are openly available and can be readily used by adversaries and/or terrorists to threaten the security of the United States. In addition, the diverse requirements for and multiple applications of space-based positioning, navigation, and timing services require stable yet flexible policies and management mechanisms. The existing management mechanisms for the Global Positioning System and its augmentations must be modified to accommodate multi-use applications and program planning, resource allocation, system development, and operations. Therefore, the United States Government must improve the policy and management framework governing the system worldwide;

stations to support their continued ability to meet their requirements.

ensure that the United States maintains space-based positioning, navigation, and timing services, including augmentation, back-up, and service denial services, to support their continued ability to meet their requirements.

space-based global, precise positioning, navigation, and timing services, including augmentation, back-up, and service denial services, to support their continued ability to meet their requirements.

use of any space-based positioning, navigation, and timing services, including augmentation, back-up, and service denial services, to support their continued ability to meet their requirements.

Ensure that the utility of civil services exceeds, or is at least equivalent to, those routinely provided by foreign space-based positioning, navigation, and timing services;

Promote plans to modernize the U.S. space-based positioning, navigation, and timing infrastructure, including: (1) development, deployment, and operation of new and/or

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# Existing and Emerging Threats



Apple Computers Cell Car Security & Entertainment Health & Cameras Batteries & Accessories & Electronics Surveillance Photo & All Categories

**Categories**

- Security & Surveillance
- Jammers**
- Door Phones
- Surveillance Cameras
- DVR Cards & Systems
- Cell Phone Booster
- Baby Monitors
- Baby Safety & Health

### Cell Phone Signal Jammer | GPS Blocker

**AMAZING DEAL**

## Portable Cell Phone GPS Jammer

Block all GPS GSM CDMA  
Up to 30 Feet Jamming Radius

~~US\$73.98~~ **50% off** **US\$ 36<sup>99</sup>**

Get Your Here

**WEEKLY DEAL**

### 1600MHz GPS Signal Jammer

- Special for GPS L1
- Coverage: 3 - 6 Meter

US\$35.99 **US\$ 25<sup>99</sup>** **SAVE \$10**

Save Now!

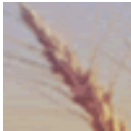
Buy Cell Phone Jammer Kits, take a look at LSPJW's range of Signal jammers & Blockers.

Four small images showing different models of signal jammers and blockers. The first shows a black rectangular device with three antennas and a 'No GPS' icon. The second shows a black handheld device with a single antenna. The third shows a white rectangular device with a 'Marlboro' logo and '2G' and '3G' icons. The fourth shows a black rectangular device with three antennas and a 'No GPS' icon.

1,978,000 hits on “GPS Jammer”



# Critical Infrastructure



[Agriculture and Food](#)



[Banking and Finance](#) \*



[Chemical](#)



[Commercial Facilities](#)



[Communications](#) \*



[Critical Manufacturing](#)



[Dams](#)



[Defense Industrial Base](#)



[Emergency Services](#)



[Energy](#) \*



[Government Facilities](#)



[Healthcare and Public Health](#)



[Information Technology](#) \*



[National Monuments and Icons](#)



[Nuclear Reactors, Materials and Waste](#)



[Postal and Shipping](#)



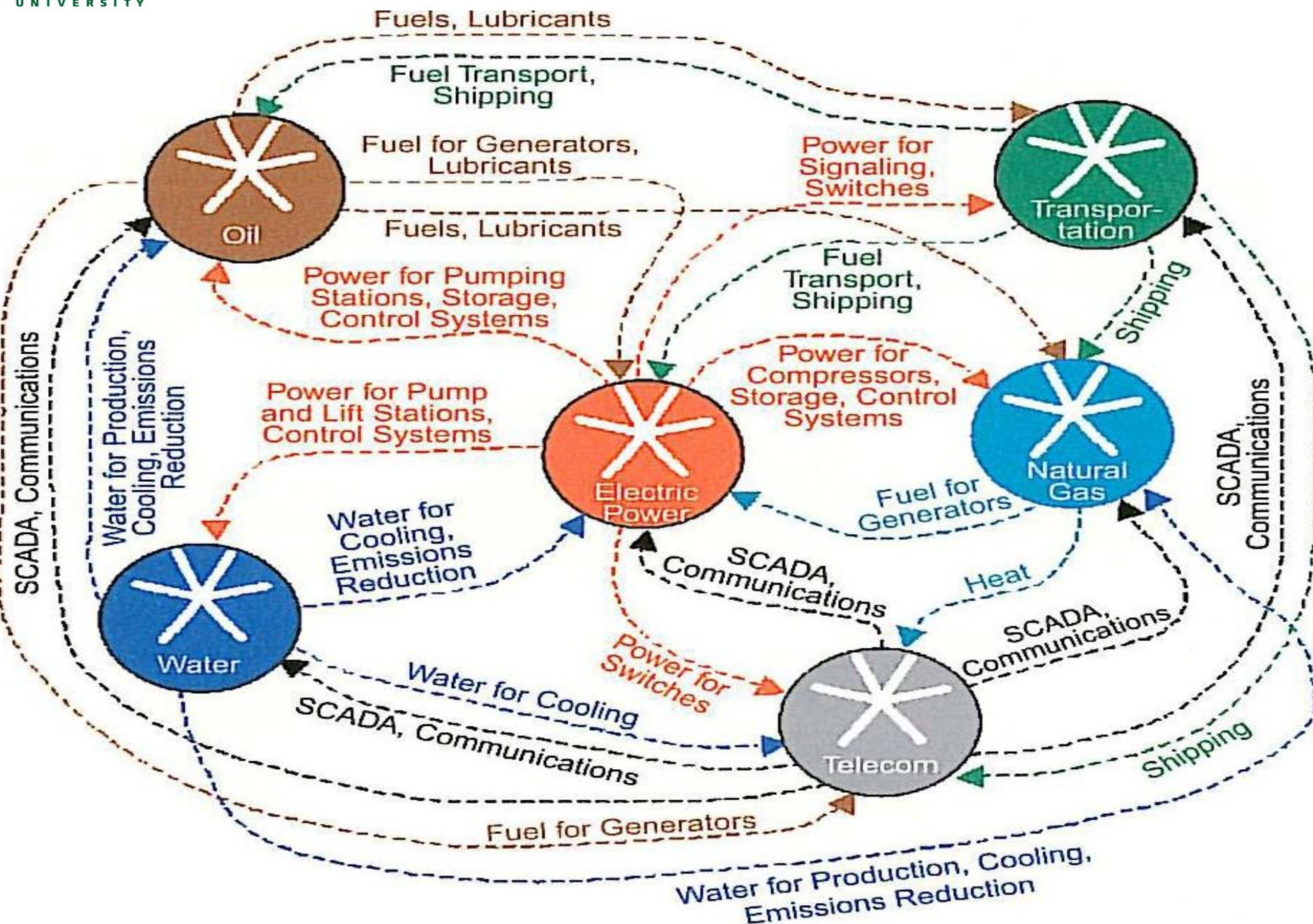
[Transportation Systems](#)



[Water](#)







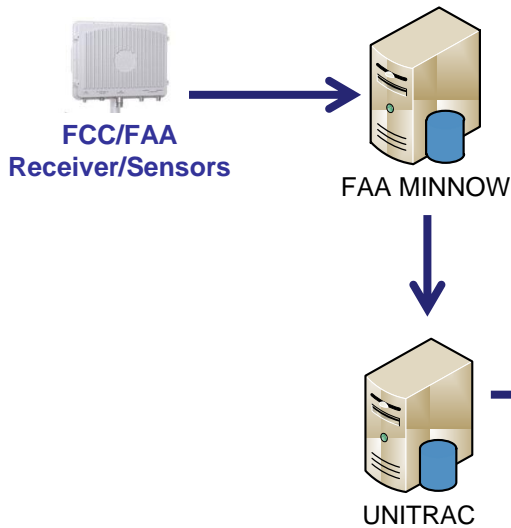
# Patriot Watch™ Initiative

- Protect the Nation's 18 Critical Infrastructure & Key Resource Sectors (CIKR)
- System-of-Systems, Open Architecture, Multi-Phased/Multi-Layered Approach
- Near Real-Time Situational Awareness of Position Navigation and Timing (PNT) Interference
  - Leverage Existing mature capabilities & focus on the data,  
less on system/device
  - Common Data Structure for Information Sharing

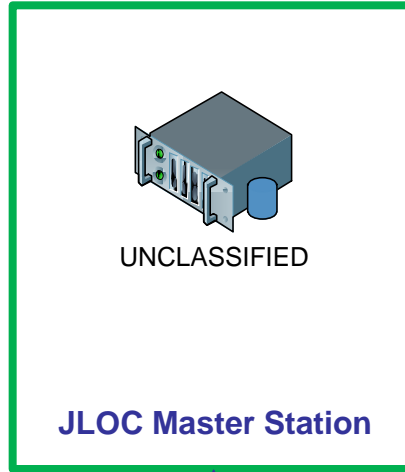


# Patriot Watch™ Architecture

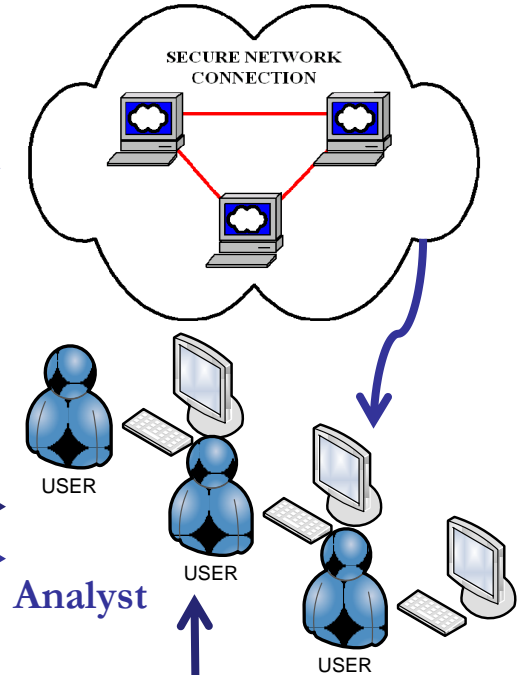
## Monitoring & Collection



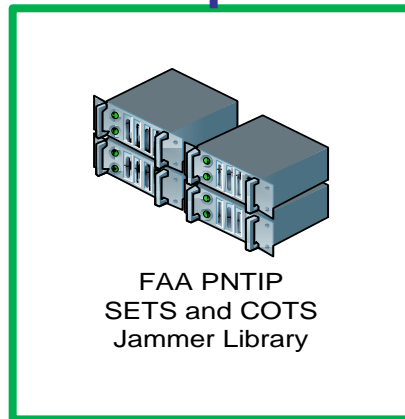
## Processing



## Analysis & Evaluation

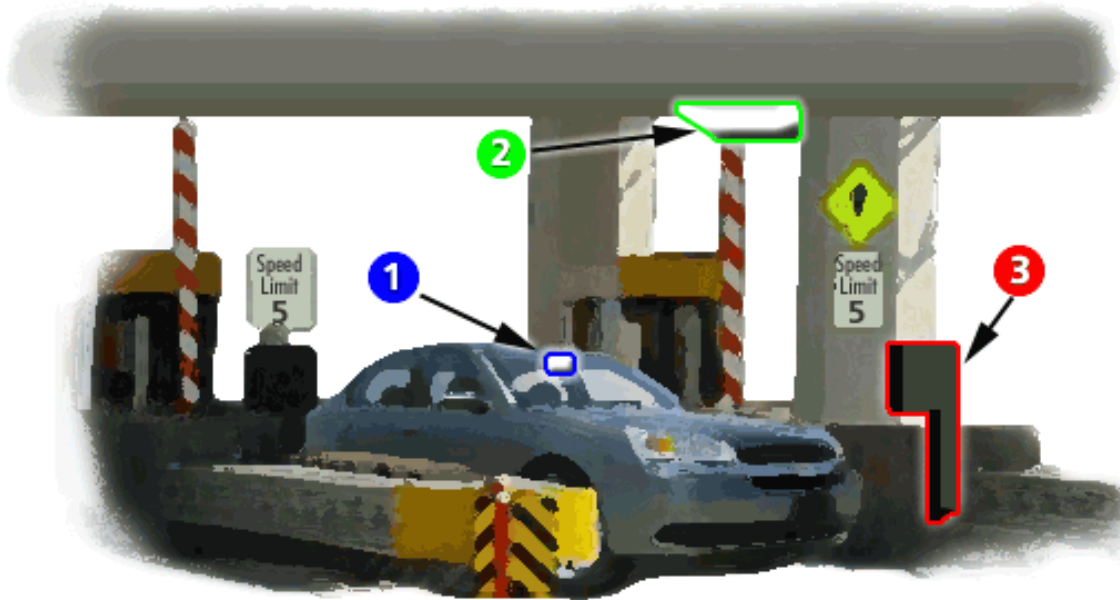


Other Systems that use GPS that could provide near real-time data: DGPS, CORS, Cell Sites, Transport Companies





# Toll-Booth Concept



- 1** Jammer      **2** Jammer Sensor      **3** Integrated Camera System

- Integrated with Camera System
- Alert Enforcement Personnel to Jammer Presence
- Detect & Track Jammers Approaching Entry Point
- Multi-Lane Distinction
- **UNITRAC Database Connection**

Graphic Source: [http://www.northjersey.com/news/030211\\_NJ\\_Turnpike\\_to\\_accept\\_E-ZPass\\_in\\_all\\_lanes\\_.html](http://www.northjersey.com/news/030211_NJ_Turnpike_to_accept_E-ZPass_in_all_lanes_.html)



# IDM Collaboration Sites



## Homeland Security Information Network

Welcome to HSIN

User Name:   
Password:

You are accessing a U.S. Government information system, which includes (1) this computer, (2) this computer network, (3) all computers connected to this network, and (4) all devices and storage media attached to this network or to a computer on this network. This information system is provided for U.S. Government-authorized use only. Unauthorized or improper use or access of this system may result in disciplinary action, as well as civil and criminal penalties. By using this information system, you understand and consent to the following: You have no reasonable expectation of privacy when you use this information system; this includes any communications or data transiting or stored on this information system. At any time, and for any lawful government purpose, the government may, without notice, monitor, intercept, search and seize any communication or data transiting or stored on this information system. The government may disclose or use any communications or data transiting or stored on this information system for any lawful government purpose, including but not limited to law enforcement purposes. You are NOT authorized to process classified information on this system.

DO NOT PROCESS CLASSIFIED INFORMATION ON THIS SYSTEM

U.S. Department of Homeland Security

## PNTIP Application Login Page



Login Email:

Password:

[Change password?](#) [Lost password?](#)

Warning: This is a Federal Aviation Administration (FAA) computer system. 1370.79g

This computer system, including all the related equipment, networks and network devices (specifically including Internet access) are provided only for authorized U.S. Government use. FAA computer systems may be monitored for all lawful purposes, to ensure that their use is authorized, for management of the system, to facilitate protection against unauthorized access, and to verify the security of this system.

During monitoring, information may be examined, recorded, copied, and used for authorized purposes. All information, including personal information, placed on or sent over this system may be monitored. Use of this FAA computer, authorized or unauthorized, constitutes consent to monitoring of this system.

Unauthorized use may subject you to criminal prosecution. Evidence of unauthorized use collected during monitoring may be used for administrative, criminal or adverse action. Use of this system constitutes consent to monitoring for these purposes.



# GPS COTS Jammer Digital Library

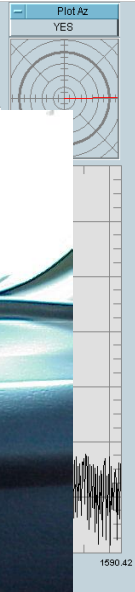
START J:\Logdata\EWR\EBR\_GBAS\_10Mar25\_1338\_RHCP\_MB

Format Status	YES
Write Date Time	NO

GpsWeek GpsTime(SOW) Az(deg) El(deg) CNO\_L1(dB) CenterFreq1(Hz) Span1(Hz) SweepT  
ime1(Sec) VideoBW1(Hz) ResBW1(Hz) Attenuator1(dB) RefLevel1(dBm) LogScale1(dB) M  
umPoint1 AveragingCount1 AveragingOnOff1 FreqReference1

1576 418292.7 89 999 -7.8 1575.4 30.0 0.020 100000 300000 0 -20 -20.00 10 1001 10 1 EXT

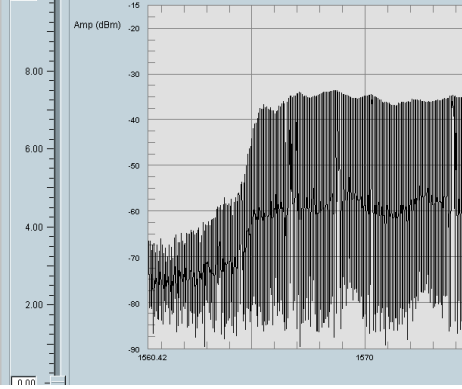
Plot Az YES



START

Format Status	YES
Write Date Time	NO
Delay	0.05

Amp





# FCC Jammer Enforcement

<http://www.fcc.gov/encyclopedia/jammer-enforcement>

**\*\*\*ALERT\*\*\***

**Federal law prohibits the operation, marketing, or sale of any type of jamming equipment, including devices that interfere with cellular and Personal Communication Services (PCS), police radar, Global Positioning Systems (GPS), and wireless networking services (Wi-Fi).**

*"Jamming devices create serious safety risks. In the coming weeks and months, we'll be intensifying our efforts through partnerships with law enforcement agencies to crack down on those who continue to violate the law. Through education, outreach, and aggressive enforcement, we're tackling this problem head on."*

*-- P. Michele Ellison, Chief, Enforcement Bureau*

For more information: <http://www.fcc.gov/encyclopedia/jammer-enforcement>





# If you see something...

## Say Something™

- **USCG Navigation Website:**
  - <http://www.navcen.uscg.gov/?pageName=gpsUserInput>
- **Federal Communication Commission website:**
  - <http://www.fcc.gov/complaints>
  - [For further info e-mail: jammerinfo@fcc.gov](mailto:jammerinfo@fcc.gov)



# Conclusion

- **Government (Federal and civil) agencies collaborating to address PNT IDM**
- **The ability to share information in a timely manner key to successful PNT IDM**
- **Leverage existing mature technologies that use GPS and harvest near real-time data**
- **Collecting data to support formal analysis; trends on jammers**
- **COTS Jammer Library will provide initial fingerprint of devices encountered**



# THANK YOU

[John.Merrill@hq.dhs.gov](mailto:John.Merrill@hq.dhs.gov)

(202) 447-3731 PNT PMO

(202) 731-9628 Mobile

