

# Billing Modules

## False Alarm

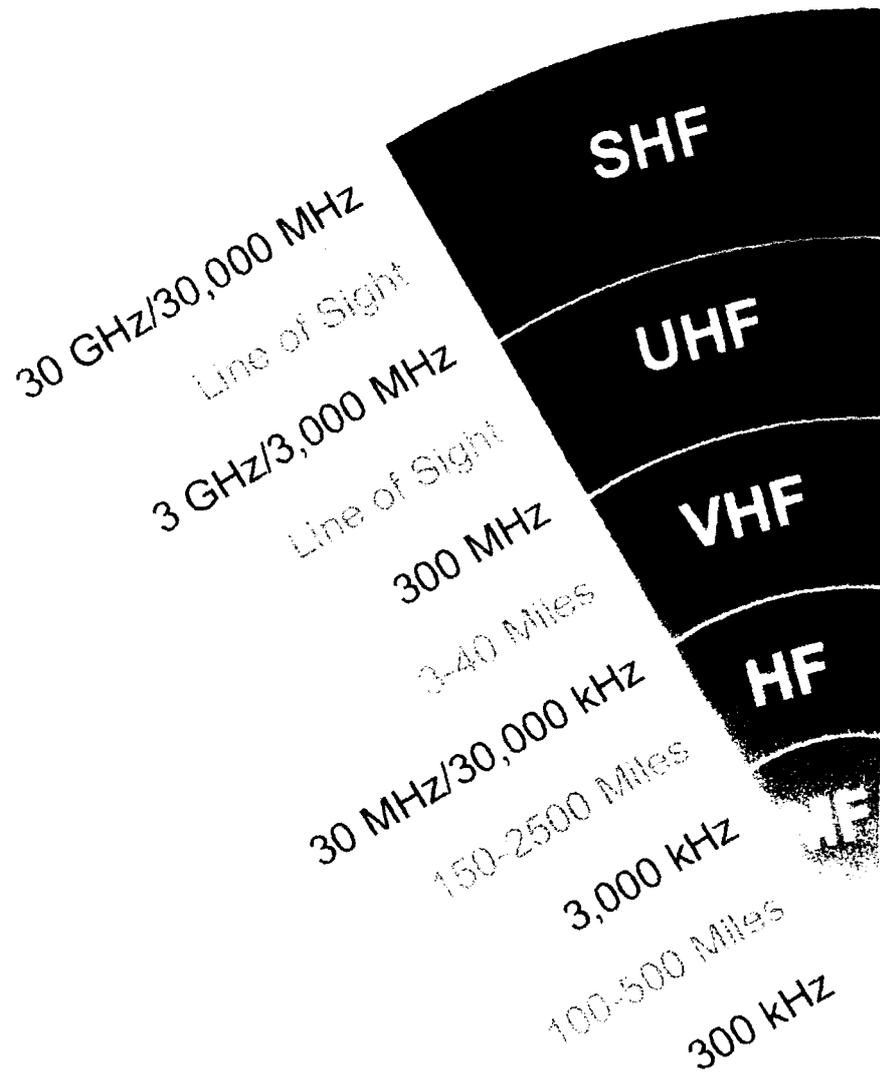
- Automates the billing process for false alarms.

## Parking/Traffic Violations

- Integrated with the persons file by name and license number.
- Payments and balances are maintained.
- Dunning and scofflaw letters are created.
- Information can be transmitted to the state DMV.
- Increases efficiency and revenue for municipality.



# Typical Users of the Spectrum



Satellite Systems (500 MHz)  
Radars (10- 30 MHz)

Channel 20 506-512 (6 MHz; 6000 kHz)  
Taxi (25 kHz)

Channel 5 72-86 (6MHz;6000 kHz)  
Police, Fire, Ambulance Radio (20 kHz)

Citizens Band Radio (10 kHz)

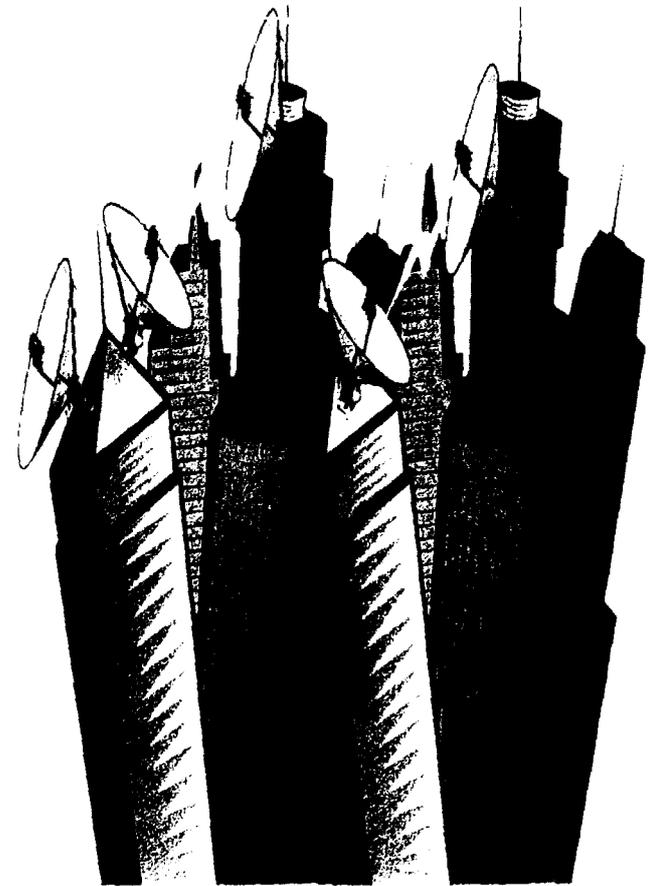
Voice Radio (3kHz)

Commercial Broadcast Band (540 - 1600 kHz)

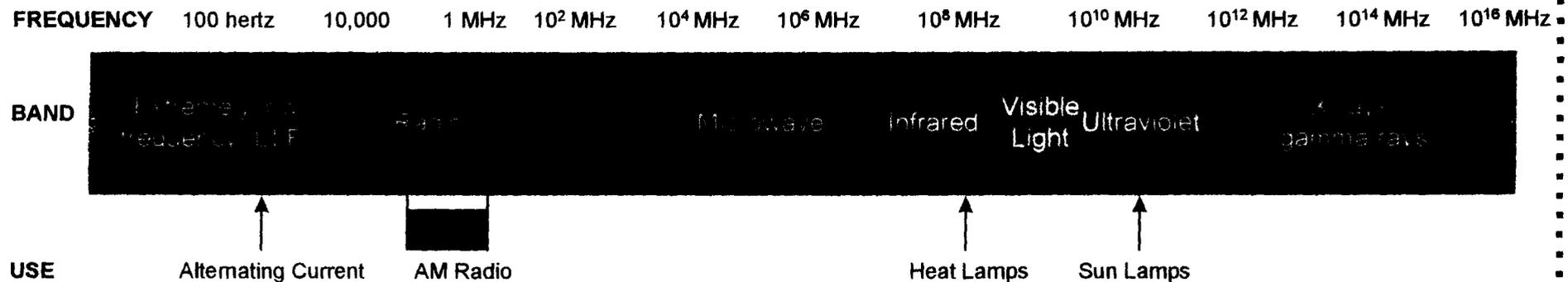
compu  DAWN

# Spectrum Congestion Analysis

- ◆ Most Existing Public Safety bands congested; Communication bands are the most cluttered.
- ◆ More requests in the Public Safety bands.
- ◆ Spectrum Congestion causes huge coordination problem.
- ◆ Problems are compounded by sharing within same bands.



# Airwaves for Public Safety



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# Airwaves for Public Safety

FREQUENCY 100 hertz 10,000 1 MHz  $10^2$  MHz  $10^4$  MHz  $10^6$  MHz  $10^8$  MHz  $10^{10}$  MHz  $10^{12}$  MHz  $10^{14}$  MHz  $10^{16}$  MHz

BAND

USE

Alternating Current

AM Radio

Heat Lamps

Sun Lamps

VHF Television channels 2-6

FM radio stations

VHF Television channels 7-13

UHF television frequencies

FREQUENCY 25 MHz 100 200 300 400 500 600 700 800 900

BAND

NON-FEDERAL PUBLIC SAFETY CHANNELS

**25-50 MHz**  
Includes 315 channels for wide area coverage, mostly by state highway patrols.

**156-174 MHz**  
The first public safety frequencies were allocated here; includes 242 channels.

**220-222 MHz**  
10 channels recently allocated, but little suitable equipment is available.

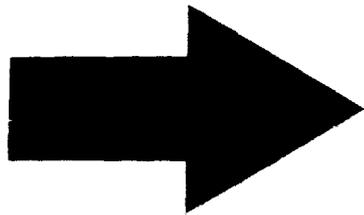
**450-470 MHz**  
74 Channels.

**470-512 MHz**  
Some unused TV channels are available.

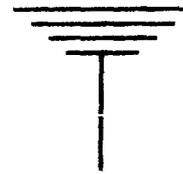
**806-821 MHz and 851-866 MHz**  
70 Channels.

**821-824 MHz and 866-869 MHz**  
230 Channels allocated in 1987.

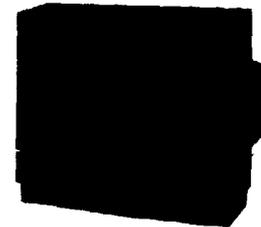
# Directionality



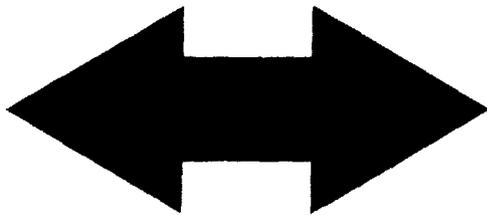
Simplex



XMTR



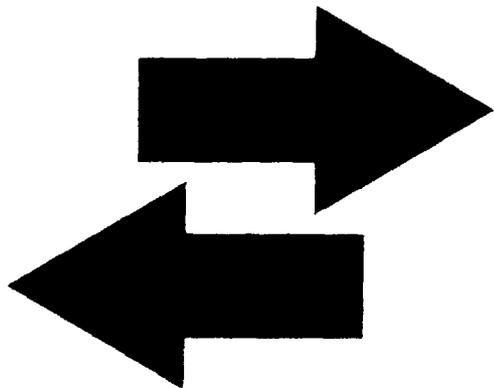
TV Set



Full Duplex (FDX)



Telephone



Half Duplex (HDX)

Push to talk  
microphone

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