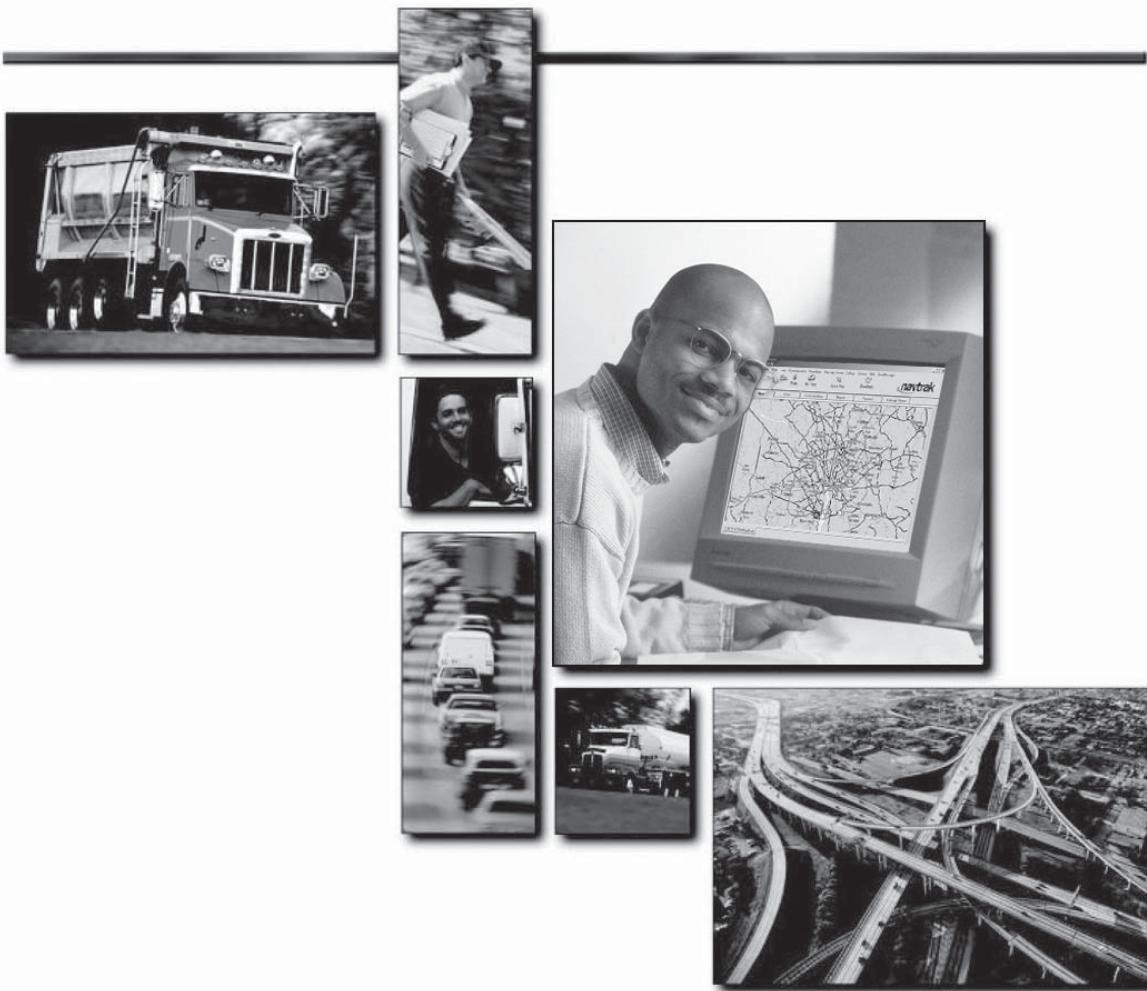


Navtrak Mobile Manager®

904X Installation Guide

For use only with 1XRTT service.



navtrak

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Note: Changes or modifications to the Mobile Manager® are strictly prohibited and could void the authority to operate equipment.

Section 1: Installation Tools Checklist

1. Navtrak Street Suite® must be installed on computer with internet access.

(If you are running an older version of the Navtrak Mapping Software, please contact Navtrak Technical Support at 800-787-2337.)

Computer Operating System Requirements:

- Windows 2000
- Windows XP (Home or Professional Edition)

(For other operating systems, contact Technical Support at 800-787-2337.)

CPU

- Pentium II-based PC 233 MHz or faster

Memory

- 128MB (256MB recommended)

Hard Drive Space

- 725MB HD space

Monitor

- VGA or better display 1024x768 resolution
- 8mb video card (16mb recommended)

Web Browser

- Internet Explorer 6.0 or higher
- AOL 8.0 or higher

Internet Access

- Minimum speed 56 Kbps

2. Be prepared for all bench testing and installations with the following:

Bench Utilities:

- Navtrak approved antenna
- 110VAC to 12 VDC converter
- All power cables
- Standard RS-232 9-pin serial cable

Installation Items:

- Voltmeter
- Torque Seal
- Spare Magnetic Mount antenna
- Spare 34-pin Molex Connector

Section 2: Preparing for Installation

1. Review your installation plans with the customer to ensure proper antenna type and placement. Keep in mind the antenna has to see the sky, and it cannot be obstructed by metal objects, (such as ladders stored on vehicle roof). Whenever possible use a tri-band high gain through hole 5/8" bolt antenna (part order #402120). This antenna may also be adapted for mirror, trunk lip, or L-bracket mounting.

Note — The antenna must be installed to provide a separation distance of at least 20cm (8 inches) from all persons. The 20cm separation distance from the antenna is required to meet FCC RF exposure compliance requirements.

2. Navtrak Mobile Managers should always be mounted in a secure location where LED's can be read and unit easily removed for service.

Note — Covert Installations

1. Navtrak does not take responsibility for system performance degradation when using concealed or disguised antennas (covert antennas).
2. If the customer insists on concealing units, they should be advised of possible additional labor costs for upgrades and possible servicing.
3. Navtrak requires customer to sign a release for customer choice of covert antenna and/or concealed installations.

Section 3: Bench Testing the Mobile Manager®

Although Navtrak ships all units programmed and tested, it is highly recommended that each unit is bench tested prior to scheduling installation.

1. Attach GPS and RF data antenna cables.
2. Power up unit.
3. Wait 5 to 10 minutes for the unit to receive GPS satellites position information (acquire GPS lock).
4. Go to www.navtrak.net/partners.

5. Login using your username and password.
6. At the top center of the page select "Bench Test Center".
7. Select "Vehicle Last Report".
8. Scroll down and select the new customer to be installed.
9. You can now view the last report for each vehicle. Remember that you are looking at a web page; to view the latest updates, you must refresh your browser.

Section 4: Installing the Mobile Manager® in Vehicles

(Also see the checklist on page 6.)

1. Mobile Manager® location

Mobile Manager® should be mounted in a safe area and the LED's should be easily seen by a service technician or customer. This will assist technical trouble shooting, so a customer can tell a remote technician what the LED's are doing.

Note: Concealing the Mobile Manager® is never a good idea and the customer will have to pay higher technical cost due to the additional labor required to manage covertly installed units.

- a. Determine a location in the vehicle that is free of moisture and out of the way.
Note: Do not mount unit in the engine compartment.

Navtrak recommends mounting the unit in the following areas:

1. Under the seats but away from heat ducts and electric seat motors.
2. In the trunk either on the shelf, under the rear deck, or in a compartment.
3. Under the dashboard or behind the glove box.

- b. Mount the Mobile Manager® using $\frac{1}{4}$ inch screws or tie straps.

2. Antenna placement and mounting

a. Navtrak approved antennas must be used. All antennas are available through Navtrak's distribution center. See page 11 for a list of approved antennas and order information.

b. Antennas should be mounted in an open area where the antenna has "good" line-of-site to see the satellites in the sky.

Note — The antenna must be installed to provide a separation distance of at least 20cm (8 inches) from all persons. The 20cm separation distance from the antenna is required to meet FCC RF exposure compliance requirements.

- c. Do not mount any antenna within 6 inches of any metal object that extends above the antenna. This may cause false readings or obstruct line-of-site to satellites.
- d. If an antenna is to be mounted on a non-metal surface, an antenna with a built-in ground plane must be used.
- e. Adhere glass mount antennas on clean glass surfaces. The antenna placement area on the glass should have little to no curvature.

NOTE: Navtrak will not stand behind any installation where installers have used unapproved antennas. Poorly placed or unapproved antennas can seriously degrade system performance. If Navtrak discovers a customer's system to be degraded due to poor installation, improper antenna location or unapproved antenna, Navtrak will correct the problem and bill the Sales Partner who installed the system for time and materials used to correct the problem.

Section 4

(continued)

f. Run the antenna cables to the Mobile Manager®, being careful not to crimp the cables or put stress on the connectors. Excess antenna cables should be zipped tied and secured. Exposed antenna cables and any other exposed wiring should be loomed. **Do not splice antenna cables.**

3. Connecting power cables

- a. Route the power cables from the Mobile Manager® to the fuse panel of the vehicle. All 12 volt connections must be fused with the fuse installed as close to the 12 volt source as possible. Using a voltmeter, locate a constant +12VDC point that does not drop below +10.5 VDC when the engine is started. Connect the red wire to this point. If any splices need to be made, use the appropriate connectors or solder and tape the splices.
- b. The ground wire (black wire) should be screwed to chassis ground. If chassis is painted, paint should be scrapped first. **Do not** use the screw holes on the Mobile Manager® as a ground.
- c. When attaching to a switched 12 volt source (green wire), use industry standard connectors to attach wires to the fuse block and then tie-wrap to secure wire, so it can not be pulled out. Prior to attaching, be sure to use a voltmeter to locate a switched +12VDC point that is only present when the ignition is on.

- d. All exposed wiring should be secured and loomed.
- e. Once all power cable assembly connections are made, test the pins in the 4-pin Molex connector to verify proper voltage and grounding.

4. Optional accessory items

If any switches, outputs, or temperature probes are used, wire them to the accessory plug using the pin out diagram (page 10).

5. Apply Torque Seal

All antenna connectors, fuse holders and electrical connections should have torque seal applied.

Installation Checkpoints

Checkpoint 1 Mobile Manager® Location

- Mobile Manager® must be installed in an environmentally safe area (ie. Dry, climate controlled)
- Mobile Manager® must be in an area where it is easily serviceable
- Mobile Manager® must be secured (ie. Self tapping screws, zip ties, Velcro, double sided tape on horizontal surface)
- Vehicle label (vehicle alias)

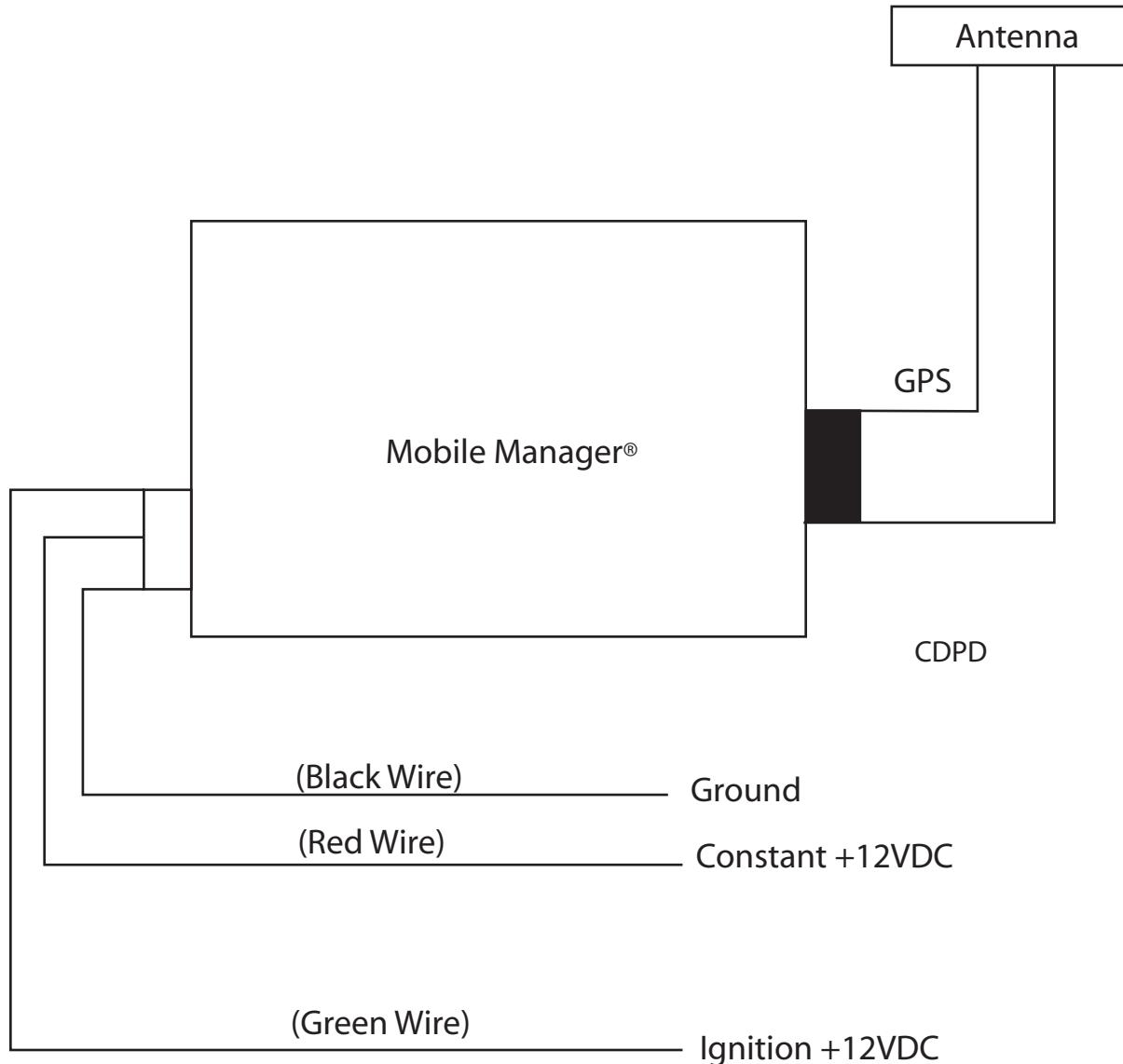
Checkpoint 2 Antenna Location

- Surface mount antennas must be mounted on flat surface
- All antenna placement must have clear line-of-sight to the sky
- Nut on surface mount antennas must be secured tightly (concave side of nut must be in direct contact of mounting surface)
- If installing antenna on metal, nut must adhere to metal surface, if a metal surface is not available, a ground plane must be installed (per the manufacturer's specifications)
- Glass surface for placing a glass mount antenna must be clean and clear of debris
- Location of glass mount antenna must not interfere with wiper blades in operation
- Glass area where mounting antenna should have a 30 degree angle
- Antenna must not be placed under any over hanging objects
- Antenna must not be placed closer than 6" from light bars, or sirens
- Antenna cable should be free of crimping or pinching
- If antenna cable is exposed (or in a high stress area) the cable should be loomed
- Extra antenna cable should be zip tied and secured
- Antenna should be securely fastened to Mobile Manager® antenna connections
- Be careful not to "over tighten" GPS Antenna connector onto Mobile Manager® connector
- Place torque seal on antenna connections
- Antenna cables may be extended up to 20 feet
- Use Navtrak approved antennas only

Checkpoint 3 Power leads and ground wire

- Red wire should be connected to a constant source of 12 volts which does not drop below 10.5 volts when engine is running
- Green wire should be connected to a 12 volt power source that is only available when ignition state is "on"
- Black wire should be grounded to chassis (bare metal) ***It is important that Mobile Manager® mounting screws are not used for a source of grounding.***
- When wiring to the fuse panel, installer must connect using industry standard connectors (such as: pig tail and brass terms)
- Torque seal must be applied to the fuse connections
- When connecting fuse blocks to power leads, installer must connect wires using 18 gauge butt connectors (provided in power kit)
- If wires are exposed (or in a high stress area) loom must be applied and wires must be secured (no sagging)
- Voltage must be checked at molex power connector
- After connecting molex connector to the Mobile Manager®, torque seal must be applied

Basic Installation Diagram



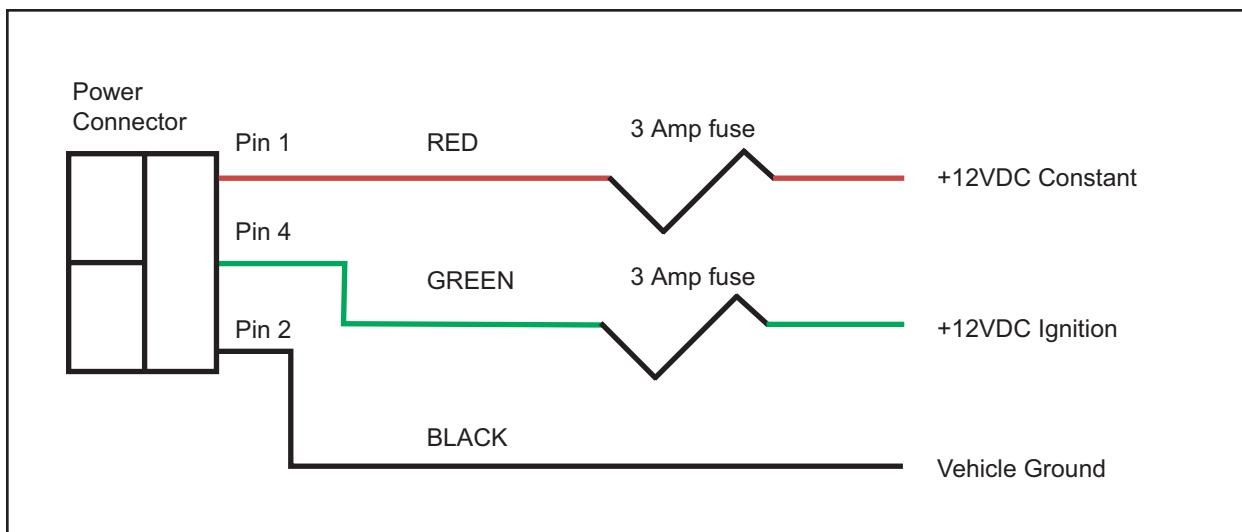
LEDs for diagnostics

Power Cable Guide

1	2
3	4

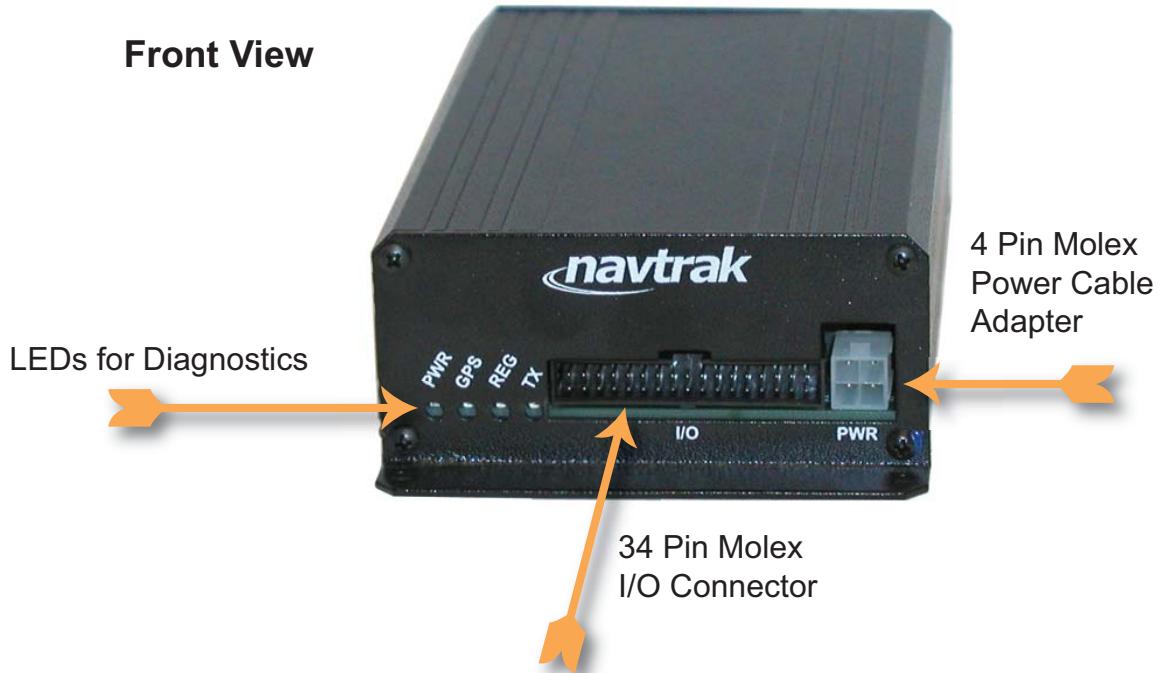
Molex Pin Out Diagram

Power Cable	
Pin	Description
1	Constant +12VCD
2	Ground
3	Not used
4	Ignition Input +12VCD



Mobile Manager® Diagram

Front View



LED DISPLAY DURING NORMAL OPERATION

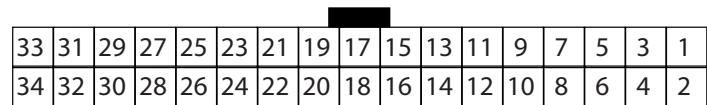
PWR (Green)	Lit constant when ignition is on. Fast flash when ignition is off.
GPS (Amber)	Slow flash when unit is in sleep mode.
REG (Amber)	Lit constant when GPS is registered.
TX (Red)	Lit constant when unit is registered. Flashes when data packets are transmitted.

Rear View



Pin Layout Definition Chart

Pin#	Wire Color	Function
1	Brown	Input # 1
3	Red	Input # 2
5	Orange	Input # 3
7	Yellow	Input # 4
9		Future Use
11		Future Use
13		Future Use
15		Future Use
2,4,6,8	Black	Input Grounds
19	Green	Output #1
21		Future Use
23		Future Use
25		Future Use
20	Black	Output Ground
29	Blue	Temperature Sensor Positive
30	White	Temperature Sensor Negative
31		Future Use
32		Future Use
33		Test Mode Enable (Active Low)
34		Program Enable (Active Low)



As viewed from Rear of Plug

Navtrak Antennas and Order Numbers

Description	Sku #
 Thru Hole Surface Mount (hockey puck) White Black	401100 401111
 Glass Mount	404300
 Magnetic Mount	403200
 High-Gain Thru Hole Surface Mount 3db Gain	402120

Mobile Manager® 904X

The Mobile Manager® 904X is the in-vehicle hardware component of the Navtrak automatic vehicle location and event monitoring system.

Laptops, PDAs and other communication devices can be connected to the Mobile Manager® 904X serial port to provide two-way data communication, messaging and access to the Internet.



The Mobile Manager® 904X operates over the 1XRTT network and may be programmed over the air to meet customers' specific needs.

Specifications

Weight

Approximately 14 oz.

Power

Min +10.5V to max. +16VDC

Standard Operation +12VDC

Normal power consumption:

280mA at 12VDC

Sleep power consumption:

30mA at 12VDC

4-pin Waldom Molex power connector

Temperature

-22°F to +158°F / -30°C to +70°C

Indicators

- Power on
- GPRS registration status
- GPS status
- Data TX and RX / error

Internal Modem

Wave Com

General Specifications

- Brand Class 0
(Tx: 824 ~ 849/Rx: 869 ~ 894MHz)
- CDMA 2000 1XRTT
- 153 kbps forward and reverse
- EVRC, 13kQCELP
- Circuit Switch (IS707-A.4)
- Packet Data (IS707-A.5)
- G3 FAX
- TIA/EIA/IS-98-D
- IS-95A backwards compatible
- J-STD-008 backwards compatible

Serial Port

9-pin RS232

Dimensions

Length 5.75" Width 3.75" Height 1.63"

Inputs and Outputs

34-pin Waldom Molex I/O connector

- 8 isolated inputs, DC voltage or ground sensing
(Used for events/switches/sensors, panic button, door open, lift up, pump on, etc.)
- 4 isolated outputs 500 mA max.
(Used to activate any 12VDC module)
- 2 temperature sensor inputs
(With high and low temperature alerts)
- 1 ignition sensor

Wireless Service

1XRTT

FCC Certification

FCC Part 22 (800 MHz), Part 24 (1900 MHz)
FCC ID: MYAMM904X