

NYCDOT Parking Availability and Payment Technology RFEI – Answers to Submitted Questions

A. Questions about Project Concept, Funding and Goals

1. Is it the objective of DOT to accomplish all of the goals of the Project Concept in the limited demonstration or to communicate how our solution coupled with DOT's current and future technology can be accomplished?

The Department will accept submissions that do not satisfy all Project Concept goals, but would request information on how the proposed system will be able to work with other services or systems to provide a comprehensive system.

For the limited demonstration, proposed systems must be compatible with the City's existing and planned infrastructure (including meters, communication systems, electrical systems, etc.) and conform to existing enforcement policies and laws.

In the long term, the Department is looking for an integrated parking management solution that satisfies all the goals stated in the Project Concept and requests information regarding what modifications would be necessary to go beyond the current system. Please include details on the types of modifications (equipment, labor, and back office) and an estimated cost.

2. Would the management program integrate all technologies through a common system or portal? Who will be the key users of the management program? Would the system be used to accomplish dynamic pricing?

Information on parking space availability, and the channels through which this information is communicated to drivers in real-time, may be part of separate systems.

However, it is DOT's preference that information used to efficiently manage the curb (including parking occupancy, availability, payment and driver information) be accessible through a common portal.

The New York City Department of Transportation has sole responsibility for operation of parking meters, setting meter rates and changing regulations at on-street parking spaces in New York City, and would be the primary user of the parking management system. Users of the parking space availability system are anticipated to be members of the general public. The ability to institute dynamic pricing is one of NYCDOT's goals.

3. Regarding Section 4.3. Cost and Funding Methods; Is the City pursuing federal grants to provide funding for this project, such as environmental (reduction in emissions), stimulus, security?

The NYCDOT is not pursuing grants to fund the limited demonstration. The Department cannot comment on any future procurement that may result as part of our findings.

4. Is there a budget for these projects generally or by system and if so, can it be provided?

As per the RFEI, submissions that are selected to participate in the limited demonstration project are to be undertaken at no cost to the city.

5. Section 4. Points of Interest to NYCDOT: Staged Implementation - What is the Goal of NYCDOT for staged implementation. Is there a 3-5year plan or is intention to complete the project in a shorter period. If so, what are the time restraints of NYCDOT for this system?

It is NYCDOT's intention to stage the limited demonstrations beginning in the late spring of 2011. Implementation may be staggered to accommodate different technologies. The duration of each project may vary based upon the requirements of the system.

6. Please provide a description of what dynamic pricing is and how it would work in NYC.

For the purposes of this RFEI, dynamic pricing is the periodic adjustment of parking rates based on observed occupancy.

7. With the recent news that there is consideration being given to monetize the on street parking infrastructure how does DOT see this affecting this process?

There is no impact on this process.

B. Questions about the Limited Demonstration

1. Purpose of RFEI – The second paragraph indicates this is a limited demonstration. Can DOT please clarify the meaning of limited demonstration? We would be interested in hearing the demonstration scope intentions in terms of geographic area and time frame.

NYCDOT would work with the selected vendor to identify a location or area that would be appropriate to evaluate the proposed technology or system. The size, scope and duration of the program would be negotiated with the vendor; however the primary goal of the demonstration would be to evaluate the feasibility and performance of the proposed technology. Preliminary, the NYCDOT would look to begin the demonstration in spring 2011 and run for 6 months. However, the time frame is subject to change depending on the infrastructure and technology changes that the proposed system would require.

2. Goals and Objectives are very broad however DOT provides very specific Project Concept (PC) detail. Is it the objective of DOT to accomplish all of the goals of the PC in the “limited demonstration” or to communicate how our technology coupled with DOT’s current and future technology can be accomplished? Achieving all the PC goals in a limited no cost pilot will be very difficult depending on the definition of “limited demonstration”.

It is not required for respondents to meet all the goals specified in the limited demonstration. However, DOT would like information regarding how the proposed technology would be compatible with other technology or software platforms to meet all stated goals.

3. Will the results of the demonstrations be shared with all participants?

There are no plans to distribute information about the demonstrations to RFEI respondents.

4. Will the results of the demonstrations be a matter of public record?

Yes. The results of the demonstration are property of the NYCDOT, and as such, are subject to the Freedom of Information Law.

C. Questions about On-going DOT Initiatives

1. Background – DOT suggests they have piloted multi-space meters, testing of real-time space availability and cell phone payments. Can DOT share with whom, where and the results of these pilots.

NYCDOT conducted a space availability pilot for the 2008 ITS International Conference. This pilot was conducted for a 6 week period in an off-street parking field in Lower Manhattan. 10 sensors placed in the wheel stops of 10 parking spaces provided real time space occupancy and availability. Video counts of vehicles entering and exiting the location provided availability for the entire location by percentage (e.g. Broome & Ludlow Municipal Parking Field 86% occupied).

The Department intends to release an RFP for a cell phone pilot that is separate from this RFEI.

2. At page 2 of the RFEI the NYCDOT describes that it ‘has undertaken a number of initiatives.....including a series of peak-rate pilots....and cell phone payment at municipal lots...” Who was this cell phone payment provider? How many locations and spaces were involved in this pilot? When was this pilot and for how long? What was the adoption rate of cell phone payment on these municipal lots? Did the cell phone provider charge the end-user, did NYCDOT absorb the transaction fee, or was it offered at no cost? If possible, please provide more information, such as but not limited to an adoption rate overview per month per location.

The Department intends to release an RFP for a cell phone pilot that is separate from this RFEI.

D. Questions about Enforcement

Hand-held Devices

NYCDOT does not have the authority to issue summons/violations. Instead, this task is performed by the New York Police Department’s Traffic Enforcement Unit (NYPD Traffic).

1. Would you consider real time and on-line enforcement using cellular and/or Wi-Fi capable hand held devices?
2. What kind of hand held device do you currently use?
3. DOT mention the handheld enforcement devices are not wireless due to security concerns. Can DOT explain what manufacturer of handhelds DOT currently uses, and what the security concern is?

NYPD Traffic currently uses the Motorola MC9090S for capturing summons detail and O’Neil’s 4Te Printer for printing the summons. NYPD Traffic’s current Parking Ticket Device System (PTDS) is based on a store-and-forward technology: the handheld device is synchronized with the PTDS after the Traffic Enforcement Agent (TEA) returns from a tour.

NYPD Traffic handhelds do support wireless communication (Wi-Fi only); however, the current parking ticket application (Integrator 2000) is not designed for receiving real-time information. It is exclusively used for data capture. NYPD Traffic Agents use Wi-Fi in the field exclusively to print the summons from the MC9090S handheld to the O'Neil printer.

4. DOT mentioned that the current enforcement handhelds are not wireless and therefore it will require NYPD to carry another enforcement device to receive real time information about parking violations.

The MC9090S can support WWAN (Cellular), Wi-Fi and Bluetooth. The handhelds can send information to the O'Neil printer and is capable of receiving real-time information with an optional accessory. However, the accessory was not part of the current authorized procurement contract. For the purposes of the limited demonstration, enforcement technology and infrastructure can be assumed to have no Wi-Fi "receive" capabilities.

5. DOT mentions the current handheld enforcement devices have no more memory and DOT is in the process of replacing the current devices. Can DOT describe the capabilities of the new devices being considered and will they be wireless?

The MC9090S handheld devices that have been issued to the Traffic Agents have sufficient memory (128mb) for running the PTDS application along with a 4 GB SD card for increased storage. The current Motorola MC9090S were part of a hardware upgrade for all Parking Enforcement Commands that started in January 2010 and recently ending in June 2010. NYCDOT and NYPD cannot comment at this time on the procurement of any new enforcement devices, but may take responses to this RFEI into account during the process.

6. Is NYCDOT planning to implement the new hand held units before it will roll out its integrated solution as described in the RFEI?

No. For the limited demonstration, current enforcement devices, technology, back-office capabilities and communication systems are fixed.

Violations and Fines

1. Appendix B. Section 1.1 Paid Parking Options: Please confirm if the Department of Sanitation gives out parking violations or enforces parking. If so, what means do they currently use to enforce parking? Please confirm the process for the department of Sanitation in regards to parking enforcement.

The Department of Sanitation may affix stickers to vehicle windows that inform a driver of a violation of parking regulations. Usually, stickers are used when a parked vehicle has impeded the Department of Sanitation in cleaning a street. The New York City Fire Department and MTA New

York City Transit may affix stickers to vehicle windows when vehicles are blocking fire hydrants/lanes and bus stops/lanes, respectively. Only the NYPD may issue parking summonses.

2. Appendix B. Section 1.3 Parking Adjudication: It is not clear to me how the city wants to integrate this division..... Do they currently have access to any Parking operation system? Do we need to provide them information for court cases?

No, the Department of Finance does not currently have access to NYCDOT parking operation systems. The proposed system must include proof-of-payment at on-street metered parking that provides the same (or more) information than the current system.

3. Is NYCDOT currently considering/piloting drive by enforcement solutions, and if yes who and since when?

Drive-by detection systems (including but not limited to enforcement solutions) are one of the technologies that the Department is interested in receiving information about as part of this RFEI.

E. Questions about Off-Street Facilities

1. In Appendix B. DOT mentions several off-street decks managed by private operators. Can DOT provide the private management company by managed deck?

Assuming the word “decks” means garages, then DOT operates garages via contracted management services. These include:

- o **Central Parking:** Bay Ridge, Queens Borough Hall
- o **Parking Systems:** Court Square (Queens), Delancey & Essex Streets (Manhattan), Jerome Avenue and Gun Hill Road (Bronx), Jerome Avenue and 190th Street (Bronx), Queens Family Court (Queens), 149th Street (the Bronx), Staten Island Courthouse (Staten Island)

2. Can DOT provide the area where pay and retain meters are located and where DOT may be adding or changing to pay and retain with the Next Generation selection.

NYCDOT’s current plan is to phase out “Pay & Retain” operation at its off-street locations in favor of “Pay & Display” operation. However, if there are clear advantages to “Pay & Retain” as part of the selected Parking Availability and Payment Technology system, this plan will be reconsidered.

The current “Pay & Retain” locations include:

Bronx:	Belmont Field
Brooklyn:	Bensonhurst #1 & #2, Sheepshead Bay #1 & #2
Queens:	Bayside Ditmars #1 & #2, Flushing #3 & #4, Steinway #1 & #2
Staten Island:	Ferry Terminal #2, Great Kills, New Dorp

3. Appendix B. Section 1.1 Paid Parking Options: Last paragraph concerning private off-street parking garages. Does NYCDOT currently have buy-in from any of the private off-street garages to be included in the city wide Parking Availability and Payment Technology System? Will the private off-street garages have access to the NYCWIN?

At this time, and for the purposes of the limited demonstration, there are no plans to include private off-street garages and lots in the integrated system. Private parking facilities do not have access to NYCWIN.

F. Questions about Meters and Payment

1. In a pay and display environment it is virtually impossible to tie on-street payments to real time violations via the sensing technology. Are DOT open to a different method of operation with DOT's on-street multi-space meters?

The Department has no immediate plans to utilize means for documenting payment of parking at muni-meters other than "Pay & Display". Other means for payment documentation could be explored in the future.

2. Are DOT's current multi-space meters wireless and are they networked together?

Currently, multi-space meters communicate via GPRS modems to the vendor's back office through a third party provider. The Department maintains web-based access of the overall system.

3. What is the SLA provided by this system?

The Department prefers not to disclose the terms of its current contract.

4. DOT mentions the Next Generation of Meters are being selected. Can DOT share DOT's intentions as it relates to single space or multi space meters. Will the next generation be limited to pay and display as is the current method of on street operations? Where is DOT in this process?

NYCDOT's current plan is to replace many of its single space meters with "Pay & Display" on-street multi space meters in the next three to five years. However some on-street meters will remain in single-space operation.

5. Can DOT explain the meters that handle commercial parking and describe those permitted to park in commercial parking area?

In the areas designed as part of the "Commercial Paid Parking" program, commercial vehicles purchase parking at "Pay & Display" muni-meters. As of November 2010, commercial vehicles can

purchase up to three hours of parking, with rates set at \$2.50 for the first hour, \$5.00 for two hours and \$9.00 for three hours. Only licensed commercial vehicles (as identified by their license plate and registration and stipulations specified in Section 4-01(b) of the Vehicle and Traffic Law) may park in Commercial Paid Parking zones.

6. Appendix B. Section 1.1 Paid Parking Options: Are there any plans to expand the PARK Smart program in the City (near and long term future). If yes, please describe in detail the plan.

The PARK Smart program, which charges peak rates at high demand times, has been made permanent in Greenwich Village, Manhattan and Park Slope, Brooklyn. A third pilot is in progress on the Upper East Side, Manhattan. DOT is committed to completing six pilots by 2012. Further expansion of the program will be determined by the results of the pilots.

7. Does NYCDOT foresee a merging of future payment systems with those being proposed and trialed by other NYC agencies, e.g. NYCT?

The Department is open to opportunities to integrate payment options provided by other entities.

8. Is the NYC Parking Card a RFID/Proximity card or does it contain information on a magnetic stripe? If magnetic, is the NYCDOT open to switch to RFID or similar proximity card solutions?

The NYC parking Card is a chip based debit style memo card (GemPlus GemClub Memo card).

9. Is the NYC Parking Card reloadable and if yes, how? Is there currently a secure website or IVR system in place?

The NYC Parking Card is technically reloadable. However, the Department does not currently provide a system to reload/recharge.

10. Does every card contain a unique card number, stated on the card?

Each NYC Parking Card has a unique serial number that is printed on the back of the card.

G. Questions about Communications

1. Is it possible to get a static IP address assigned?

Yes, static IP address assignments are possible, but dynamic address assignments are preferred as the advantages equate to more effective use of the available resource and better server management of address assignments.

2. Does the City wish to have the servers and applications for this system reside within the City's network? Or are hosted servers and applications outside the City's network an acceptable solution?

Traditionally, agencies using NYCWiN access host applications that reside on CityNet, the City's private metropolitan area network providing fundamental transport mechanism for inter- and intra-agency communications citywide, which is the preferred path to NYCWiN for security purposes. CityNet transports all forms of network communications including data, voice and video over a fiber infrastructure comprising the core and subtending rings. However, if a decision is made to consider an alternative path to NYCWiN, the proposed path must be vetted by the City's security governance counsel to comply with encryption requirements minimally; and the path is to be designed in a manner that serves the best interests of the City.

3. Regarding Section 3.2 Project Concept NYCWiN: Does the currently available stand-alone NYCWiN modem used for backhaul support a standard TCP/IP Ethernet connection? Does this modem by itself comply with NYCWiN security requirements, e.g. VPN/firewall? Can you please provide us with a parts list of the various kinds of NYCWiN compatible modems available including technical and environmental specifications?

Various form factors are NYCWiN-compatible, from plug-in laptop devices to fixed-wireless devices enhanced with provisions for sensors. The NYCDOT currently utilizes modems Classes 4A and 4B in their Urban Traffic Management program over NYCWiN. [Please refer to the attachment describing the various modem form factors that are proprietary to NYCWiN. Also see additional attached specification sheets for NYCWiN modem models.](#)

4. Are there any licensing fees required by IPWireless or Northrop Grumman for using the NYCWiN network?

The NYC DoITT and the NYCDOT need to anticipate device volume in order to determine NYCWiN backend capacity and integration requirements. The potential for fees is dependent on the use of mobile and/or fixed modems, as each are served for various tunneling resources, i.e. NetMotion versus generic IP SEC configurations; and also whether system integrator and/or modem manufacturer resources would be required to integrate program modems.

5. Appendix C: New York City Wireless Network: 3rd paragraph - Benefits for next generation network - item (3) Automatic Vehicle Location Technology - Is there a vendor chosen for this item? Is work in progress? If yes, please provide vendor information and explanation of the technology for planned usage.

NYCWiN supports an enterprise AVL capability integrating City graphic information system (GIS) maps that host multiple layers of information to track vehicles from a central location in real-time. The capability enables the agency's control center to more accurately dispatch its fleet resources. The system integrator vendor for the NYCWiN AVL program is Grey Island. [Please refer to the attachment for additional AVL information.](#)

6. Appendix C: New York City Wireless Network: General. Is there any plan with Northrop Grumman to expand the network for new applications proposed for the City?

Many New York City agencies are beginning to use the NYCWiN system for network transmission. Agency applications are in the Development phase with focus on bringing these pilot programs into Production; and in parallel, efforts are in progress to bring Conceptual applications into the Development phase. NYCWiN was developed in response to today's public safety challenges in the urban environment providing mission critical communications to the City's first responders and essential services. The network enables the secure transfer of critical information featuring strong encryption, multi-level authentication and physically protected equipment installations. NYCWiN enhances accessibility to all City agencies. The network also features enterprise solutions including limited incident based video resource sharing, AVL and sensor-based technologies, secure mobile computing and fixed wireless technology. In 2009, as a technology refresh, the City implemented enhanced software on the network. The upgrade allows for greater throughput speeds and higher capacity without the need for additional hardware/sites, and next generation modems leveraging the upgrade capabilities have been deployed in many agency applications. The network does not need to be expanded for NYCDOT use, except in the case of high-bandwidth applications, such as full-motion video

7. What equipment is permitted on the network? Can we use any UMTS compliant devices or is there a list of approved vendors and hardware? Are there OEM modem modules available that are pre-approved?

Please refer to Question 3 above –NYCWiN broadband devices are platform-compatible and comply with the City's network architecture and security policies.

8. What data requirements does NYCDOT have for its requirement to 'communicate with NYPD and DOF systems...' as stated on page 4 of the RFEI? What platforms do these systems operate?

NYC agencies make use of the NYCWiN system for which data requirements are defined above.

H. Questions about Availability Hardware and Systems

1. Would NYCDOT be open to installation of in-ground sensors?

Yes. However, the integrity of sensors in roadway would be subject to damage resulting from street construction, street sweepers, snow removal, street cuts and other operations common on City streets. Respondents should be prepared to document their products' durability in their written response and in the limited field demonstration.

2. Would NYCDOT be open to marking stalls for the demonstration?

Yes.

I. Miscellaneous Questions

1. Regarding 5.2 Submission Details: The requirements for hard copy are very clear. What are the detailed requirements for Electronic format? File format e.g. Adobe Acrobat.pdf? What are the requirements for "in writing" material to accompany the CD/DVD? For Example: Cover Letter signed ink with one hard copy of response material?

Electronic copies in PDF format may be e-mailed or mailed on CD/DVD. Please send a follow-up confirmation email if the PDF is e-mailed, as NYCDOT network size and firewall restrictions may block transmission. The NYCDOT would appreciate one hard copy of the materials, if possible, for ease of review. There are no requirements for "in writing" material to accompany electronic submissions.

2. Section 6 - Additional Information item 6.6 "All submissions shall become the property of NYCDOT and the city shall not be returned. Does the "submission" include materials for the trial if NYCDOT chooses that route?

"Submission" refers to all materials sent to NYCDOT, hard copy or electronically, in response to the RFEI. Data generated as part of the demonstration is property of the NYCDOT – however equipment and propriety software remain the property of the vendor.

3. Section 6 - Item 6.7.3 "use the ideas and/or submissions in any manner deemed to be in the best interest of NYCDOT and the City...." Will respondents be notified if their submissions are shared with other vendors or agencies?

DOT shall endeavor to notify any entity that submits a response to the RFEI; however, DOT does not guarantee that it shall notify any submitting entity prior to disseminating and/or using such information.

4. Section 6 - General: Please confirm that all information is not to be confidential. The plan is to be high-level in nature and as such the vendor will have the opportunity to present their ideas in a face to face forum with NYCDOT and the City?

Information from the RFEI is property of the NYCDOT, and as such, is subject to the Freedom of Information Law. The NYCDOT does not guarantee any vendor a face to face forum with NYCDOT or any New York City agency.

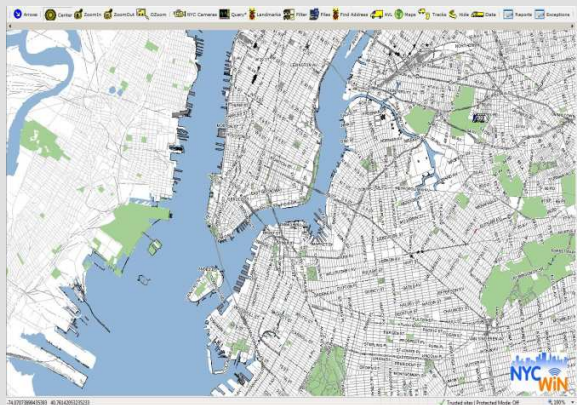
5. Section 6 - Item 6.7.4 "Change any terms of the RFEI". Does this include changing terms to offer an award of contract to the RFEI?

No. The RFEI will not be used to award any contracts.

Information Sheet -- NYCWiN AVL

NYCWiN Automatic Vehicle Location System Overview

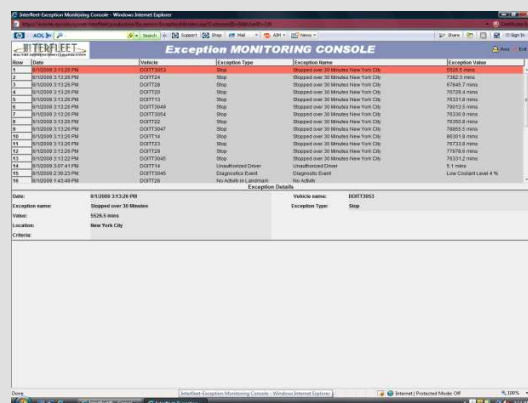
The NYCWIN AVL System incorporates the use of a device that is installed into a vehicle that together, with a web based application and wireless connectivity provides real-time and historical vehicle location data and map display to authorized agency personnel. Whether a user is logged in or not, vehicles automatically report data such as vehicle ID, GPS fixes (speed, direction, location), and vehicle telematic information (selected input data and/or sensor readings like temperature or doors open/close). When users log in, their browsers are updated every second with vehicle movements, allowing them to watch live fleet activity. Through up to 16 sensor integrations, it monitors vehicle conditions in real-time in addition to automatically logging the data for operations reports. These provide fleet managers the ability to address issues and adapt to changes in operating procedures.



NYCWiN AVL Map

Application

This computer based system utilizes satellite-based Global Positioning Systems (GPS) to identify the location of a NYCWIN AVL equipped vehicle. The vehicle location is transmitted wirelessly to the AVL server which can be accessed by an agency so vehicles can be monitored and reports can be generated. In addition to monitoring vehicle location, the AVL system also has the ability to monitor multiple vehicle inputs such as engine diagnostics and third-party components (such as the status of salt-spreaders or whether a vehicle door is opened or closed). Systems such



AVL Exception Monitoring Console

AVL System Components

The AVL System consists of the following components:

- AVL Mobile Data Unit
- NYCWiN modem
- Tri-band antenna
- AVL web portal
- Standard reporting capabilities

Optional Components

- Dead Reckoning capability
- Charge Guard (power protection unit)
- Engine Control Module Interface
- Sensor capabilities
- Pin Pad (vehicle operator identifier)
- Commercial modem
- Zone exception (landmark/geo-fence) plotting

Reporting Capabilities

Standard reports are available as part of the core system. Customized reports can be produced to accommodate a specific agency's needs and will be priced accordingly. The current offering provides the following standard reports:

- Vehicle Activity Summary Report
- Vehicle Stops Report
- Vehicle Status Report

as these can be utilized to reduce vehicle response time, decrease fleet costs, improve routing and customer service while providing real-time vehicle information.

Software Capabilities

The web application enables an authorized user to view vehicle travel on a map. A user can place the cursor over a given vehicle or data point and obtain information about the vehicle in real-time or view information about the vehicle in the past. Examples of retrievable data include date, time, vehicle speed and heading. If optional sensors or engine diagnostics is added, that data can also be viewed. Vehicle travel can be played back to view a vehicle's travel route for a specified time period and reports can be generated based on data gathered.



AVL Application Data Screen Shot

Exception Reporting

When optional Zone Exception is incorporated, the system will alert a user, in real-time, when a vehicle enters or leaves a predetermined virtual zone. A zone or geofence is an electronic boundary that a user can create to monitor vehicle location and movement. Geo-fences may be created, viewed, and edited visually on a map. Once the geo-fence is set and configured to provide an alert, a user will be notified when the vehicle crosses the geo-fence boundary.

AVL Activity Summary Report

Date	Vehicle	Travel Time	Stop Time	Idle Time	Red Stop %	Distance (Miles)	Max Speed (MPH)	Chgs
3/15/2008 1:00:00 AM	25CZ121	1:10:00	40:11:24	17:40:00	0.13	212.0	68.0	10
3/15/2008 1:00:00 AM	25CZ121	No activity						
3/15/2008 1:00:00 AM	25CZ121	00:00:00	02:54:29	02:50:22	100	0.0	0	1
3/15/2008 1:00:00 AM	25CZ121	01:00:04	12:53:45	03:32:22	75.6	28.3	79.8	8
3/15/2008 1:00:00 AM	25CZ121	No activity						
3/15/2008 1:00:00 AM	25CZ121	00:04:15	14:01:04	13:13:21	94.0	100.0	60.0	24
3/15/2008 1:00:00 AM	25CZ121	No activity						
3/15/2008 1:00:00 AM	25CZ121	No activity						
3/15/2008 1:00:00 AM	25CZ121	No activity						
3/15/2008 1:00:00 AM	25CZ121	01:00:00	25:22:05	03:00:40	68.3	29.2	62.0	5
3/15/2008 1:00:00 AM	25CZ121	No activity						
3/15/2008 1:00:00 AM	25CZ121	00:59:12	124:47:19	12:38:46	92.0	17.0	58.4	6
3/15/2008 1:00:00 AM	25CZ121	00:59:50	00:15:55	00:13:51	84.5	2.0	21.7	1
3/15/2008 1:00:00 AM	25CZ121	01:01:00	18:00:36	00:30:51	79.2	16.0	50.0	7
3/15/2008 1:00:00 AM	25CZ121	01:08:10	40:30:51	16:26:52	66.3	26.1	60.2	9
3/15/2008 1:00:00 AM	25CZ121	02:38:44	147:52:22	07:07:11	72.8	49.8	69.0	11
3/15/2008 1:00:00 AM	25CZ121	No activity						
3/15/2008 1:00:00 AM	25CZ121	00:00:07	14:01:07	13:13:30	93.0	42.0	62.0	6
3/15/2008 1:00:00 AM	25CZ121	00:11:40	00:47:03	04:16:20	60.2	42.1	77.1	5

AVL Activity Summary Report

Data interface

AVL data is available to agencies in three ways:

- Online for up to 90 days
- Offline (archived to an FTP file) for up to 365 days
- Offline near real-time data stream in XML format

Pricing

Although the core components of the AVL System will offer agencies the opportunity to view vehicles on a map and query the system for information as well as run reports, many agencies will require additional capabilities such as sensors, engine diagnostics or customized reports. Pricing will be broken down into the following components:

Equipment/Installation

- AVL Mobile Data Unit
- Tri-band Antenna
- Sensors (optional)
- On-board diagnostics connectivity (optional)
- Charge Guard (optional)

Reports

- Standard reports (included)
- Customized Reports (optional)

Configuration

- AVL unit provisioning

Operations and Maintenance

- NOC support (Annual Service Fee)
- Warranty (Annual Service Fee)

Class 4B Traffic Controller (SOC3) Device Specifications

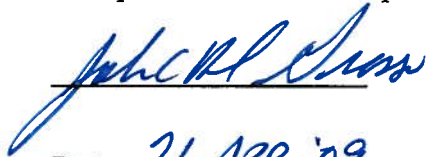
Category	Description
CPU	Intel Xscale IXP-435,533MHz
DRAM	128 MB
Flash	32 MB
Storage Expansion	SD socket (1) (2G - 8G)
USB	USB 2.0 Powered (2)
LEDs	Software Programmable LEDs - - (2) LAN - (1) Switch, - (1) Terminal Server. Ethernet Ports - Activity and Connection LEDs Serial Ports - VPN Activity and Connection LEDs
Buttons	"Reboot" and "Factory Reset"
OS	Embedded Linux 2.6
RTC - Real Time Clock Battery	No
Buzzer	User adjustable ON or OFF
Interface	
Networking	LAN: Auto-sensing 10/100 Mbps (2), RJ45 w/individual MAC addresses
	Switch: Auto-sensing Ethernet 10/100 Mbps ports (4). Full Duplex/Half Duplex.
Protection	1.5 KV magnetic isolation protection
Serial ports	Mode: RS-232/485 (Software Selectable) Connector: DB9 male Protection: 15 KV ESD protection for all signals Data bits: 5, 6, 7, 8 Stop bit(s): 1, 1.5, 2 Parity: None, Even, Odd, Space, Mark Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC Speed: 50 bps to 921.6 Kbps, Non standard Baud Rates supported
Expansion bus	On board Mini PCIe socket for PEM module (Internal)
OTHER	
Power Input	24 VDC Power input (22.8-25.2VDC) Connector type: 3-pin terminal block
Operating temperature	-20°C to +60°C
Storage Temperature	-20°C to +60°C
Certificates	FCC,UL, CE
Accessories	Power plug and Ethernet cable.

Class 4B Traffic Controller (SOC3) Device Specifications

Software	Install standard Moxa Linux 2.6 kernel only. Daemons that are available: telnetd, ftpd, sshd, apache, OpenVPN, iptables, pppd, snmpd, inetd
Dimensions	203.5(H)x123.5(D)*62mm(W)
Weight	Approx 1.5lbs
Embedded Modem (provided by Northrop Grumman Corp)	IP Wireless PCI Express Mini 2.5Ghz UMTS

The Specification Table above lists the specifications between Northrop Grumman IT and Moxa for the development of the device as described.

Signatures below indicate agreement of the Specifications listed above. Any changes to the Specifications will require further discussion and agreement, as needed.

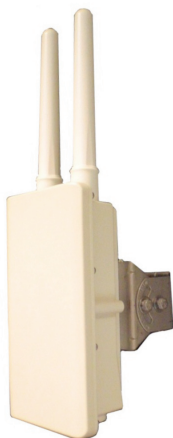


Date: 21 APR '09

John C. Del Grosso
Project Manager
NYCWiN Applications
Northrop Grumman IT

Date: _____

Moxa Rep



The IPWireless outdoor omni-directional User Equipment (UE) consists of a TD-CDMA modem and integrated antennas in an IP67 rated rugged outdoor enclosure designed for fixed wireless access application.

IPWireless Outdoor Omni-directional UE

Features and Benefits

The IPWireless outdoor omni-directional User Equipment (UE) consists of a TD-CDMA modem and integrated antennas in an IP67 rated rugged outdoor enclosure designed for fixed wireless access application. Passive Power over Ethernet is supported where the outdoor UE can be located away from the power injector and PC, and facilitates the mounting of the outdoor UE on an external wall, pole or roof top for maximum coverage.

Multi-chip rate support automatically configures the outdoor UE to match the operator's network setting. IPWireless outdoor UE delivers the highest 3G broadband data rates compared to competing broadband data technologies. The built-in Quality of Service supports the use of dedicated channels for VoIP packets and prioritization of data packets based on traffic types.

Embedded software is held in FLASH memory for ease of upgrade. The outdoor UE can be upgraded by software download via the PC or network push upgrade over-the-air.

Applications

The IPWireless outdoor UE connects to the Ethernet port of a laptop or desktop computer for a single user configuration. A Windows™ based connection manager provides a graphical user interface for connection management, software upgrade and troubleshooting. The IPWireless outdoor UE can also be used in conjunction with a Point-to-Point Protocol over Ethernet (PPPoE) enabled residential router to provide Internet access over Wi-Fi around the home.

Specifications

Operating Frequency (Select on order)	2.5GHz variant 2496 – 2690 MHz TDD 700MHz variant: 698 – 716 MHz Tx / 728 – 746 MHz Rx FDD 776 – 798 MHz Tx / 746 – 768 MHz Rx FDD
Duplex mode	Time Division Duplex (TDD) Half Frequency Division Duplex (H-FDD)
Chip rate / channel bandwidth	3.84 Mcps / 5 MHz 7.68 Mcps / 10 MHz
Transmit power	+24 dBm +1/-3 dB (3GPP Class 2 UE)
Data rate (8 DL and 4 UL time slots)	Up to 7 Mbps downlink / 3.4 Mbps uplink in 5 MHz in E-R7 mode Up to 15 Mbps downlink / 7.8 Mbps uplink in 10 MHz in E-R7 mode
Receiver sensitivity	< -110 dBm at 17.05 kbps per SF16 code 7.68 Mcps in AWGN < -113 dBm at 7.85 kbps per SF16 code 3.84 Mcps in AWGN
Power requirements	Passive Power over Ethernet
Power consumption	4 Watts
Dimension	215 x 122 x 66 mm (excludes antennas)
Weight	2 kg
Mounting	Wall or pole mount
Host interface	10/100 BaseT Ethernet
Software drivers	Windows XP, Windows Vista, Linux (Kernel 2.6.22-14)
Operating temperature	-40 to +55 °C (-40 to +131 °F)
Storage temperature	-40 to +65 °C (-40 to +149 °F)
Humidity	0 to 100% condensing
Water/dust proofing	IP67
Standards and Regulatory Approvals	Radio: FCC Part 27 Safety: UL 60950-1, CSA22.2 No. 60950-1, EN 60950 RoHS Directive 2002/95/EC

Model Numbers

OUE-0700-06-OD	700 MHz outdoor UE with omni-directional antennas
OUE-2500-06-OD	2.5 GHz outdoor UE with omni-directional antennas

Ordering Information

To place an order, please contact IPWireless regional sales.

Americas – americassales@ipwireless.com

EMEA – emeasales@ipwireless.com

Asia Pacific – apacsales@ipwireless.com

About IPWireless

IPWireless broadens the horizons of 3GPP, the world's preeminent mobile standard, to support a range of compelling new applications and untapped global spectrum bands. With its complete end-to-end 3GPP solutions, including chipsets, devices, and complete network solutions, the Company enables mobile operators and other new wireless entrants from the government, consumer electronics, and other sectors, to deliver a new generation of wireless services. The company's proven high-performance mobile broadband solutions have been deployed by a set of marquee customers around the globe in both the commercial and government markets including T-Mobile, New York City's Department of Information Technology and Telecommunications (DoITT), and some of the first 700MHz deployments in the United States. IPWireless' award winning mobile broadcast solutions have been tested by some of the largest mobile operators in the world, and allow device, chipset and network vendors to accelerate their offerings for Integrated Mobile Broadcast (IMB), the GSMA endorsed mobile broadcast standard.

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NYCWIN COMPATIBLE DEVICE PORTFOLIO



Laptop Modem
Card



Desktop
Modem



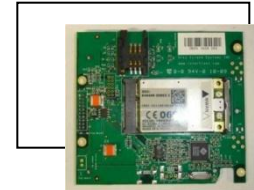
USB Modem



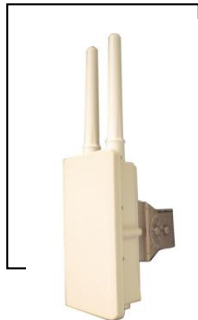
Mobile Modem



AVL Modem



PEM Chipset



Outdoor Omni-
Directional Modem



Class 4B Fixed Modem



Class 4A
Fixed Modem



Integrated
Handheld



Call Box

PC-Centric Platform Microsoft XP

NYCWiN-enabled and -embedded mobile computers and handheld devices,
and mobile and fixed location modems