



**Cirronet Corporation  
FCC Part 15,  
Certification Application  
for the Model SEM2410**

**July 3, 2002**

# MEASUREMENT/TECHNICAL REPORT

COMPANY NAME: **Cirronet Corporation.**

MODEL: **SEM2410**

FCC ID: **HSW-SEM2410**

DATE: **July 3, 2002**

This report concerns (check one): Original grant X  
Class II change \_\_\_\_\_

Equipment type: **Frequency Hopping Spread Spectrum Transceiver**

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes \_\_\_\_\_ No X

If yes, defer until: \_\_\_\_\_  
date

N.A. agrees to notify the Commission by N.A.  
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

United States Technologies, Inc.  
3505 Francis Circle  
Alpharetta, GA 30004

Phone Number: (770) 740-0717  
Fax Number: (770) 740-1508

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# SECTION 1

## GENERAL INFORMATION

## **GENERAL INFORMATION**

### **1.1 Product Description**

The Equipment Under Test (EUT) is a Cirronet Corporation, Model SEM2410 transceiver which internally uses a modularly approved 2.4 GHz spread spectrum transceiver (HSW-2410M). Since this device is typically professionally installed, this application is being submitted to certify the entire device (under a new ID number) in order to eliminate the need for non-standard connectors as allowed by 15.203.

The SEM2410 is an industrial wireless modem housed in an environmentally rugged enclosure. The circuitry inside the modem includes a modularly approved WIT2410 frequency hopping transceiver (HSW-2410M), interface, and power conditioning circuitry.

The SEM-2410 connects to the host through a standard Ethernet 10/100BaseT connection. A DB-9 serial port cable that attaches directly to the faceplate of the device is used to program internal module. Power is provided through a custom power connector. An antenna connector is also provided at the front of the unit. More detailed explanations of the function and use of the SEM-2410 can be found in the SEM product guide.

### **1.2 Related Submittal(s)/Grant(s)**

The modular transceiver contained in this device has been previously approved under FCC ID: HSW-2410M by the FCC on 10/6/99 for use with seven different antennas. The modular transceiver was additionally approved through a permissive change by the FCC on 3/29/01 for use with an additional 5 antennas. A copy of these grants are provided on the following pages.

FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554

## GRANT OF EQUIPMENT AUTHORIZATION

Certification

Digital Wireless Corporation  
One Meca Way  
Norcross GA 30093

Date of Grant: 10/6/99

Application Dated: 7/16/99

Attention: Mark Tucker, Sr Systems Engineer

## NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for  
the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER

HSW-2410M

Name of Grantee

Digital Wireless Corporation

Equipment Class : Part 15 Spread Spectrum Transmitter

Notes: Modular 2.4 GHz Transceiver

Grant NotesFCC Rule PartsFrequency Range (MHZ)OutputFrequencyEmissionWattsToleranceDesignator

15

2401.69 - 2469.89

0.05

Mail To:  
Sandi McEnery, President  
United States Technologies  
3505 Francis Circle  
Alpharetta, GA 30004



EA94846

In correspondence concerning this grant, please refer  
to the FCC IDENTIFIER and the date of grant.

PDW

FCC 731A  
October 1991

## FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

## GRANT OF EQUIPMENT AUTHORIZATION

Certification

Cirronet  
5375 Oakbrook Parkway  
Norcross GA 30093

Date of Grant: 3/29/01

Application Dated: 3/2/01

Attention: Mark Tucker, VP of Engineering

## NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for  
the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER

HSW-2410M

Name of Grantee

Cirronet

Equipment Class : Part 15 Spread Spectrum Transmitter

Notes: Modular 2.4 GHz Transceiver

<u>Grant Notes</u>	<u>FCC Rule Parts</u>	<u>Frequency Range (MHZ)</u>	<u>Output Watts</u>	<u>Frequency Tolerance</u>	<u>Emission Designator</u>
36	15	2401.69 - 2469.89	0.05		

For Fixed operation, the antenna(s) used for this transmitter must be fixed-mounted on outdoor permanent structures with a separation distance of at least 2 meters from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. For Mobile operation, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance. Power is conducted.

- 36: Certain antennas used with this equipment require a minimum cable length, or have output power limitations as documented in the application.

Mail To:  
Sandi McEnery, President  
United States Technologies  
3505 Francis Circle  
Alpharetta, GA 30004  
EA100217

### **1.3 Description of Information Provided**

Since the EUT consists of a modularly approved transceiver and a previously tested composite device to the Part 15 Class A emissions requirements. The EUT is not being changed other than the fact that Cirronet wishes to use standard connectors vs. the non-standard connectors that were approved with the modular transceiver. Therefore, further testing has been deemed unnecessary. Copies of the previously issued test reports have been provided with this application.

### **1.4 Copy of Name and Address Change**

Cirronet was known as Digital Wireless Corporation at the time the original transceiver module was approved. A copy of their name change as submitted to the FCC is included on the following page.





Office of Engineering and Technology Laboratory  
Federal Communications Commission  
7435 Oakland Mills Rd  
Columbia MD 21046-1609

January 30<sup>th</sup>, 2001

Gentlemen,

This letter is written to officially inform the FCC that **Digital Wireless Corporation** (grant code: HSW) has now changed its name to **Cirronet**. All contact information remains the same as before. Management and ownership of the company are also the same. All of our old and any new certifications should be placed under the **Cirronet** name. For your records, the new name, address, and phone number are listed below.

Cirronet  
5375 Oakbrook Parkway  
Norcross, Georgia 30093  
Ph: (678) 684-2000  
FX: (678) 684-2001

Contact Individual:  
Mark Tucker  
VP of Engineering  
[mtucker@cirronet.com](mailto:mtucker@cirronet.com)  
(678) 684-2009

Regards,



Mark Tucker  
VP of Engineering  
Cirronet

## **1.6 Professional Installation Justification – Provided by Cirronet**

For years, radio manufacturers such as California Microwave and Freewave Technologies have marketed and sold radios for use in the industrial monitoring and control market. These companies initially used licensed radio frequencies exclusively, but now also produce units operating under Part 15.247 using the 900MHz or 2.4GHz ISM band. The SEM-2410 outdoor transceiver is designed for use in those markets and to compete against the products of those companies. California Microwave and Freewave currently claim the “Professional Installation” waiver to allow the use of a number of different antennas with their products. Cirronet would obviously like to work under the same set of operating rules for our equivalent product and so we formally request the professional installation waiver for compliance to part 15.203. Our justification for requesting this waiver is as follows.

The SEM-2410 is specifically marketed to and designed for system-level installers – not the general public. As previously indicated, the SEM-2410 is designed to function as a wireless repeater between radios located in remote locations. As such, the SEM-2410 is marketed to municipalities, utility companies, oil/gas pipeline companies, and other similar users that need to monitor or control remote devices a long distance away from the central facilities. The SEM-2410 is marketed through magazines like “Wireless Mobility” and “Wireless Systems Design”. Both of these magazines have a very specialized readership and are directed specifically towards wireless system integrators – not the general public. The photos included in this report also show the “industrial” look and feel of the product. Cost is yet another indication of the intended user of the product – at roughly \$2000 per unit the SEM-2410 is clearly aimed towards industrial applications.

The intended application for The SEM-2410 requires the unit to be used as part of a larger data gathering system. This overall system will be more complex and expensive than the repeater in and of itself and will warrant installation by trained employees of the system integrator. A few technical difficulties must be dealt with when installing the SEM-2410 into an application. First, a custom-made power cable must be procured to power the SEM-2410 from an external 9 volt supply. This cable must also be connected to the custom power connector on the SEM-2410 faceplate. Second, since these links are designed to relay data between other SEM radios located in remote locations, the SEM-2410 will be mounted high atop a building or antenna mast to ensure line-of-sight propagation conditions. The amount of effort and expertise required to mount the product in these locations, by definition, implies professional installation. (Installation in these inaccessible locations also alleviates the possibility of the general public tampering with the transceiver and antenna.) Thirdly, tweaking of the system will be required during installation to achieve acceptable performance – antenna placement and adjustment of the radio parameters of the SEM-2410s in the SEM-2410. This type of technical adjustment dictates the use of trained personnel.

Given our control over the marketing, sale, and intended use of the SEM-2410 and the need for trained personnel to install the product, we request the “professional installation” waiver for compliance to 15.203. We have included the statement “professional installation required” at the beginning of the SEM-2410 users guide to alert users of the requirements.

# **SECTION 2**

## **TESTS AND MEASUREMENTS**

## **2.1 Test Report for the Original Part 15 Certification for the Modular Transceiver**

Please refer to measurement data provided for the original modular transceiver. This information has been provided in a separate file. Only applicable portions of the original test report have been provided.

## **2.2 Test Report for the Permissive Change Application for the Modular Transceiver**

Please refer to measurement data provided for the original modular transceiver. This information has been provided in a separate file. Only applicable portions of the permissive change test report have been provided.

## **2.3 Test Report for the Part 15 Class A Verification of the SEM2410**

Please refer to Part 15 Class A verification report provided for the EUT. This information has been provided in a separate file.