

---

# RF4NET ACCESS 5.7 GHz Products

---

## A Sneak Preview

Version 1.1

November 26, 2000

## Introduction

During the first half of 2001, RF4NET will introduce a new line of RF4NET ACCESS products for the 5.7-5.8GHz band. This band is unlicensed in the United States and requires licensed in most other countries in which it is allowed for use. These products, similar in architecture and functionality to the RF4NET ACCESS 2.4 product line, will enable operators to deploy broadband wireless access solutions in this new band, taking advantage of frequencies which are typically less crowded than the unlicensed 2.4GHz ISM band. RF4NET ACCESS UNII brings RF4NET ACCESS proven technology, rich functionality and carrier class infrastructure to this new frontier.

## Product Overview

The planned products include base station equipment and subscriber units. All of these have an indoor/outdoor architecture, with an indoor unit that accepts input power and presents an Ethernet interface, and a highly robust, all weather outdoor unit which contains most of the radio transmission equipment. The two units communicate via an intermediate frequency interface (IF) at 440MHz, allowing for cable lengths of up to 200 meters.

For the base station, a service provider grade 19" rack mounted chassis with dual, redundant power supplies, can house up to six access unit cards and an optional GPS synchronization card. The access units connect to an outdoor unit via an IF interface cable. The outdoor units of both the subscriber and base station products are available in two configurations, one with an integrated antenna and one with a connector to an external antenna.

The new products will employ Frequency Hopping Spread Spectrum in a Time Division Duplexing access method, thus ensuring robustness and coexistence in this unlicensed frequency band. 125 hopping bands of 1MHz each will be used, with multi level GFSK (2, 4 or 8) modulation, allowing maximum end user data rates of 3Mbit/s. The product utilizes an 802.11 like MAC layer.

The units provide transmit power levels of up 0dBm to 30dBm at the antenna port, adjustable in software in 2dBm increments. Thus, the units can be configured to fit any regulatory domain, and to a variety of antennas, achieving maximum output power and receive sensitivity.

On the receive side, the products exhibit sensitivity of up to -87dBm, allowing for distances of up to 15km.

The initial product set will include data-only products. A second phase of products – not described in this document -- will also provide voice interfaces.

The following list describes the planned base station products:

Product Type	Product Name	Product Description
Standalone Outdoor Access Unit (IF Interface)	AU-A-NI-UNII	Access unit. Includes indoor unit, outdoor unit with integrated antenna.
	AU-E-NI-UNII	Same as above, for detached antenna.
Base Station Unit	BS-SH	Base station chassis with one power supply
Outdoor Access Unit (IF Interface) for use with Base Station	AU-A-BS-UNII	Access unit. Includes base station module and outdoor unit with integrated antenna.
	AU-E-BS-UNII	Same as above, for detached antenna.
Power Supply	BS-PS	Base station power supply

The following table outlines the planned Subscriber Unit products:

Product Type	Product Name	Product Description
Outdoor Subscriber Unit (IF Interface). Includes indoor unit, outdoor unit with integrated antenna.	SU-E-1D-UNII	Outdoor subscriber unit, integrated antenna – one data user
	SU-A-8D-UNII	Outdoor subscriber unit, integrated antenna – 8 data users
	SU-E-8D-UNII	Same as above, for detached antenna
	SU-A-BD-UNII	Outdoor subscriber unit, integrated antenna – full bridge
	SU-E-BD-UNII	Same as above, for detached antenna

## Detailed Specifications

### Radio

Frequency	5.725 – 5.850 GHz	
Bandwidth Allocation	125 MHz	
Radio Access Method	Frequency Hopping - CDMA	
Operation Mode	Time Division Duplex	
Standards	ETSI ETS 300 328, FCC Part 15	
Channel Bandwidth	1MHz	
Output Power (at antenna port)	0dBm-30dBm adjustable in 2dBm steps	
Integrated Antenna Gain	SU-A: 17dBi, 20° AU-A: T.B.D.	
Sensitivity (dBm at antenna port, BER 1E10 <sup>-6</sup> )	1Mbps	-87
	2Mbps	-80
	3Mbps	-72
Data Rate	1, 2 or 3 Mbit/s	
Modulation	Multilevel GFSK	

### Outdoor Unit to Indoor Unit Communication (IF based products)

Intermediate Frequency	440MHz
Intermediate Frequency Cable Impedance	50 ohm
Maximum Intermediate Frequency cable Attenuation	15dB
Maximum Intermediate Frequency cable DC Resistance	1.5 ohm
Intermediate Frequency Cable Lengths	30m max with RG-58 cable
	100m max with RG-316 cable
	200m max with LMR 400 cable

### Configuration and Management

Local Management	Via monitor port, Monitor program using terminal emulation
Remote Management	SNMP, Telnet, TFTP
Remote Management Access	From the wired LAN or from the wireless link
SNMP agents	MIB II, Bridge MIB, RF4NET ACCESS Private MIBs
Accounting	Radius compatible client in subscriber units
Security	RC4 Authentication and Filtering, Virtual LAN
Software upgrade	TFTP download

### Interfaces

RF (antenna)	AU-RE, SU-RE: N-Type jack, lightning protected
Intermediate Frequency	AU-RA/RE, SU-RA/RE outdoor units: TNC jack, lightning protected SU-NI, AU-NI, BS-AU indoor units: TNC jack, lightning protected
Ethernet	Indoor units: 10BaseT, (RJ-45) with 2 embedded LEDs
Monitor	Indoor units: 3-pin low profile
Power	AU-RA/RE, SU-RA/RE outdoor units: 12VDC via the RF cable SU-NI, AU-NI indoor units: DC power plug to the external power supply BS-PS (Power Supply module of BS-SH): 4-pin DC power plug to a –48VDC power source

### Electrical

SU-A/E, AU-A/E-NI	12VDC / 2.5A from the external power supply (supplied with the unit), 100-240 VAC, 47-63 Hz
BS-SH (modular base station shelf)	-48VDC, 200W for a fully equipped shelf. 25W each AU (outdoor unit plus indoor module)

### Mechanical

SU-RA	30cm x 30 cm x 7.2 cm, 3 kg.
AU-RE, SU-RE	30cm x 12 cm x 5 cm, 2.2 kg.
BS-SH	19", 3U, depth 26cm, 6 kg. fully loaded

**Environmental**

Operating Temperature	Indoor units and modules: 0°C to 40°C Outdoor units: -40°C to 60°C
Operating Humidity	5% to 95% non-condensing. Outdoor units are weather protected.

**Standards Compliance, General**

EMC	EN 300-385, FCC Part 15
Safety	EN 60950, UL 1950
Environmental	ETS 300 019, Bellcore GR-63-CORE