iDEN MINI
(RSN-iDEN-25)
User's Manual

R-tron Inc.

RF EXPOSURE INFORMATION

A minimum separation distance of 7.9 inches(20cm) must be maintained between the user and the external antenna of repeater to satisfy FCC RF exposure requirements. For more information about RF exposure, please visit the FCC website at www.fcc.gov

⚠ CAUTION
This equipment is indoor use and all the communication wiring are limited to inside of the building.

This document describes the specifications, installation and operation of iDEN MINI.

Hardware and software mentioned in this document are subject to continuous development and improvement. Consequently, there may be minor discrepancies between the information in the document and the performance and design of the product. Specifications, dimensions and other statements mentioned in this document are subject to change without notice.

R-tron Inc. 6402 College Boulevard Overland Park, KS 66211
Phone: +1-913-344-9977, 1-888-31R-TRON, Fax: +1-913-344-9988,
Internet: www.r-tron.com

Contents

Figures

Abbreviations

Abbreviations used in this manual, in iDEN Add-On Filter Box.

AC	Alternating Current
ANT	Antenna
CDMA	Code Division Multiple Access
DC	Direct Current
GND	Grounding
GUI	Graphic User Interface
iDEN	Integrated Digital Enhanced Network
LED	Light Emitting Diode
PSU	Power Supply Unit
RF	Radio Frequency
TEMP	Temperature
VSWR	Voltage Standing Wave Ratio

1. Introduction

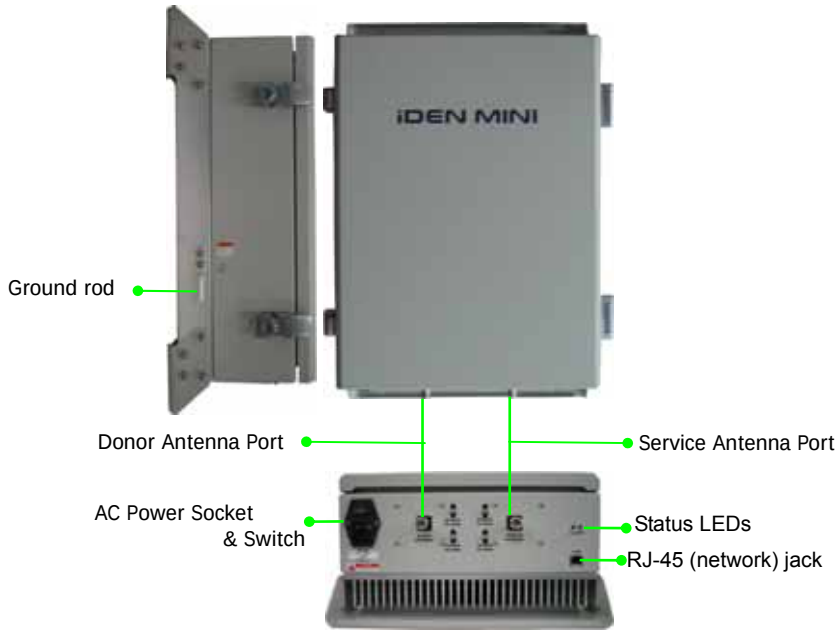

Figure 1. R-tron iDEN MINI

iDEN MINI repeater is used to fill out areas in iDEN mobile systems, such as base station fringe areas, business and industrial buildings, etc.

iDEN MINI receives signals from a base station, amplifies and retransmits the signals to mobile stations. Also it receives, amplifies and retransmits signals in the opposite direction. Both directions are served simultaneously with the following features:

- 7MHz or 18MHz-bandwidth service @ 800MHz's
- 5MHz-bandwidth service @ 900MHz's
- Band Shifting @ 800MHz's and 900MHz's
- Roll Offs: 65 dBc at 0.5 MHz outside pass-band

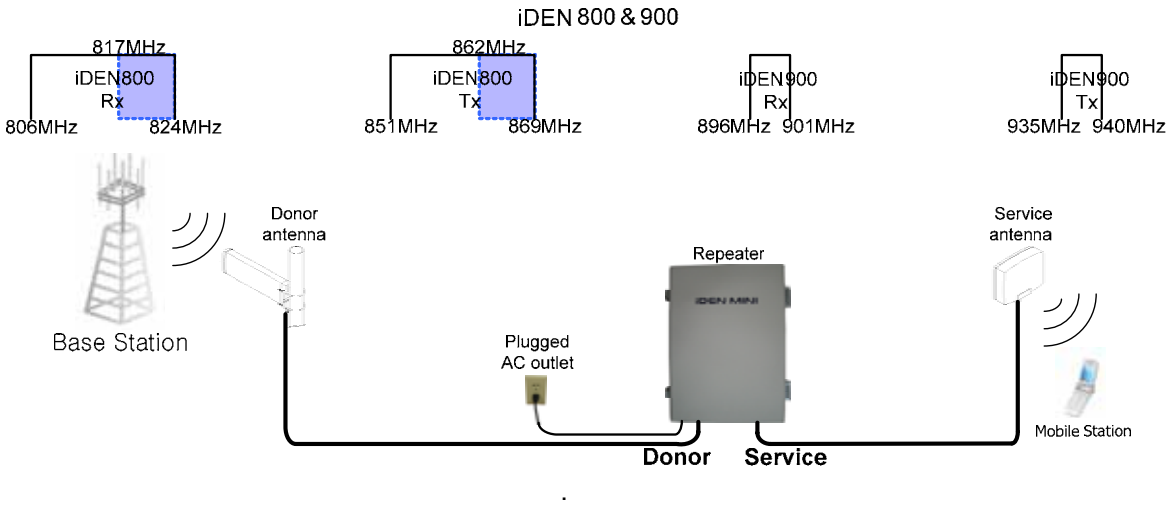

Figure 2. Overview: Service

2. Description

2.1 System Specifications

2.1.1. Electrical Specifications

Parameter			iDEN 800	iDEN 900
Selectable Bandwidth		DL & UL	In-band BW:18M In-band BW:7.0M	In-band BW:5M
Frequency Selection	DL	18MHz-bandwidth	851~869MHz 850.8~868.8MHz 850.6~868.6MHz	
		7MHz-bandwidth	862~869MHz 861.8~868.8MHz 861.6~868.6MHz	
		5MHz-bandwidth		935~940MHz 934.8~939.8MHz 934.6~939.6MHz
	UL	18MHz-bandwidth	806~824MHz 805.8~823.8MHz 805.6~823.6MHz	
		7MHz-bandwidth	817~824MHz 816.8~823.8MHz 816.6~823.6MHz	
		5MHz-bandwidth		896~901MHz 895.8~900.8MHz 895.6~900.6MHz
Roll off		DL & UL	≤65dBc @Fedge+/-500KHz	≤65dBc @Fedge+/-500KHz
Gain ripple			±1.5dB (Typical)	
Gain	DL & UL		40dB to 65dB	
Output Power	DL & UL		25dBm	
Delay	DL & UL		8.0μs Max.	
VSWR	DL & UL		1.5Max.	
Rx Noise Figure			5dB Max. (65dB Gain)	
			12dB Max. (40dB Gain)	
Input Range	DL & UL		-30dBm Max.	
Power supply			110V~125V, 60Hz typical	
Operating temperature			*-10℃~ 50℃	
Storage temperature			-20℃~60℃	
Consumption power			≤94W	

2.1.2. Mechanical Specifications

Parameter	Specification
RF connectors	N-female x 2, SMA-female x 4
Size	18.9 X13.78 X 7.22(Inch), 480 X 350 X 183.5(mm)
Weight	24kg (52.912lbs)

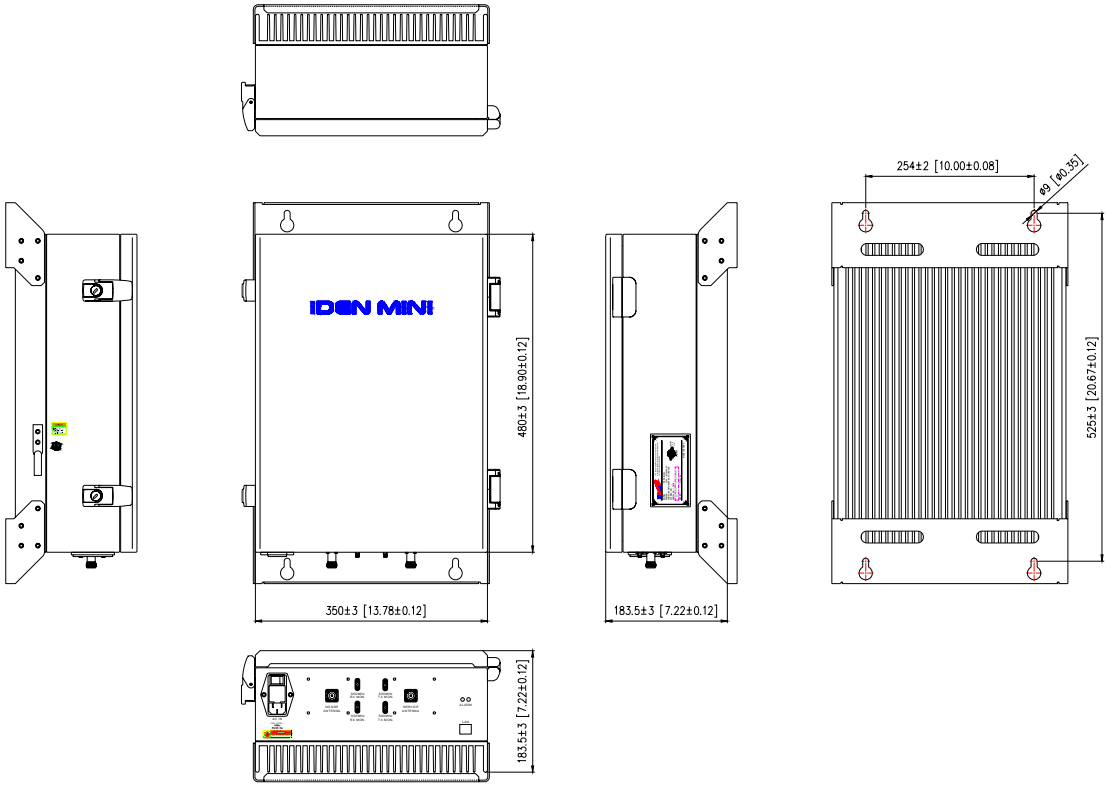

Figure 3. Dimension of iDEN MINI

2.2 Sub Unit Overview

iDEN MINI is composed of the following sub units:

- UDC(Up Down Converter)
- HPAs(High Power Amplifiers)
- Multiplexer
- Main Control Unit (MCU)
- Power Supply Unit (PSU)
- EMI Filter

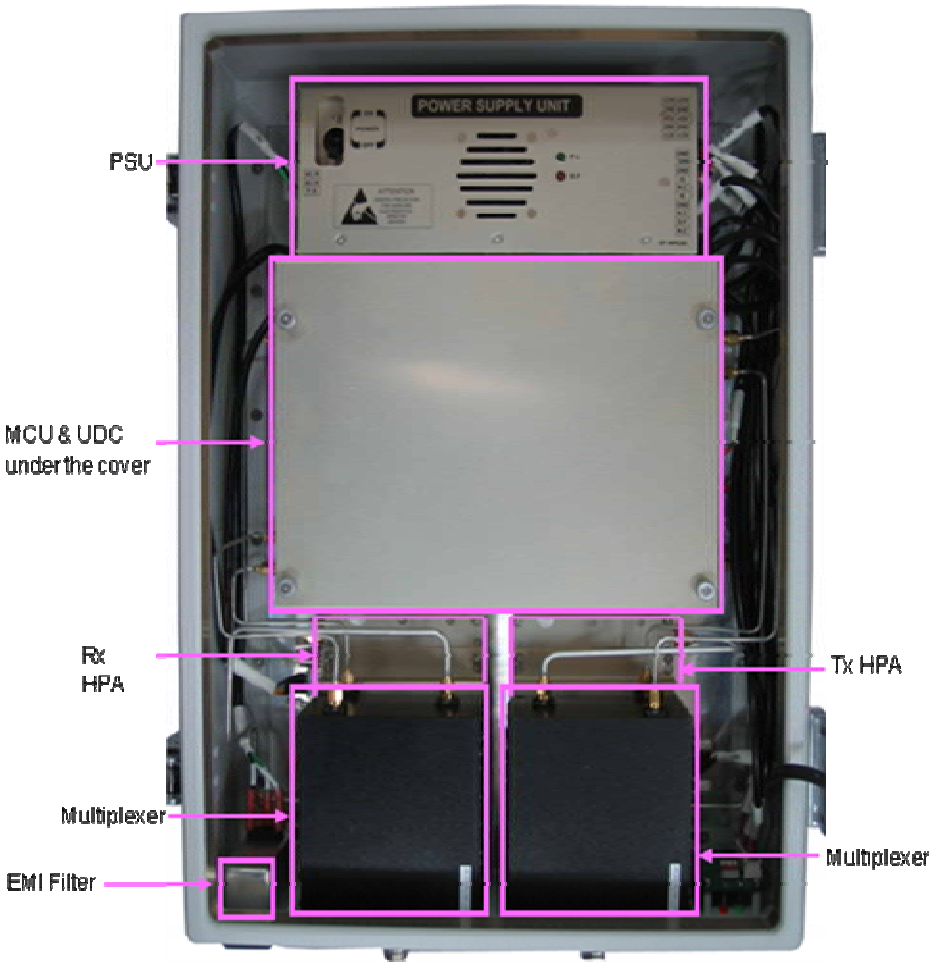

Figure 4. Internal View of iDEN MINI

2.2.1. Block Diagram

The following, *Figure 5,* explains how the iDEN MINI serves signals.

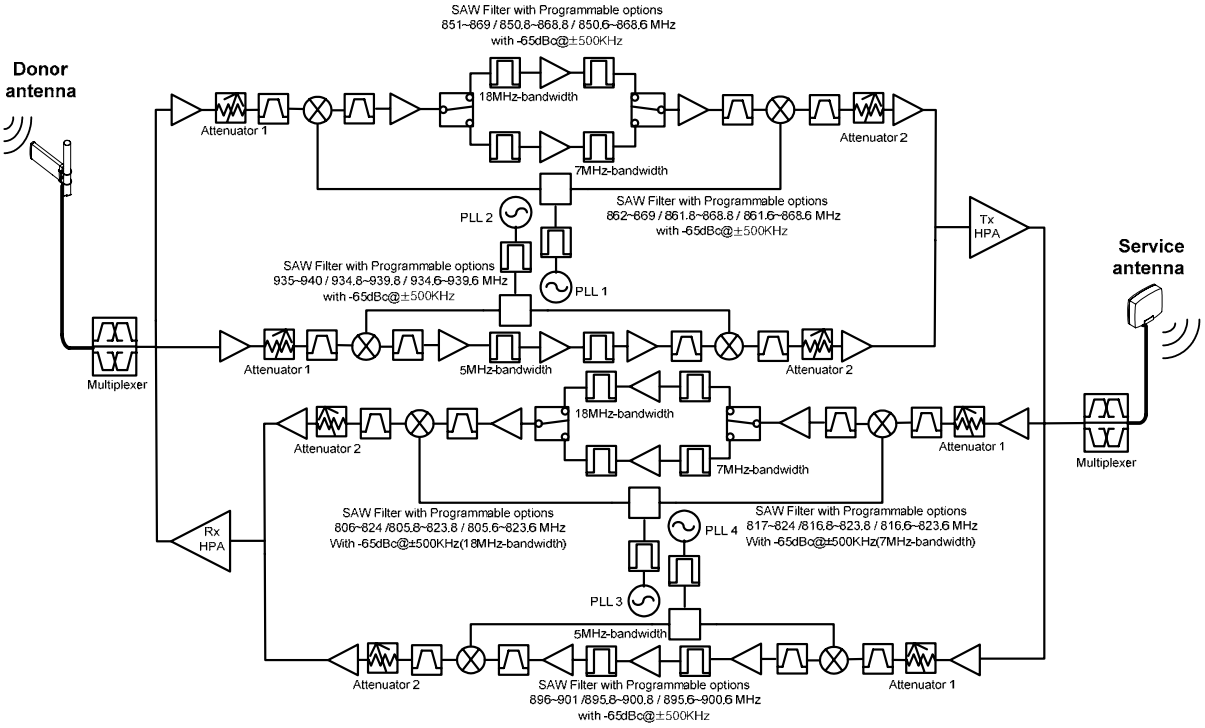

Figure 5. Block Diagram

2.2.2. UDC Module

The UDC Module is basically a bi-directional amplifier that sharply filters out unwanted noise.

Figure 6. UDC Module

2.2.3. Multiplexer

A multiplexer is a device that combines two or more signals onto a common channel or medium to increase its transmission efficiency.

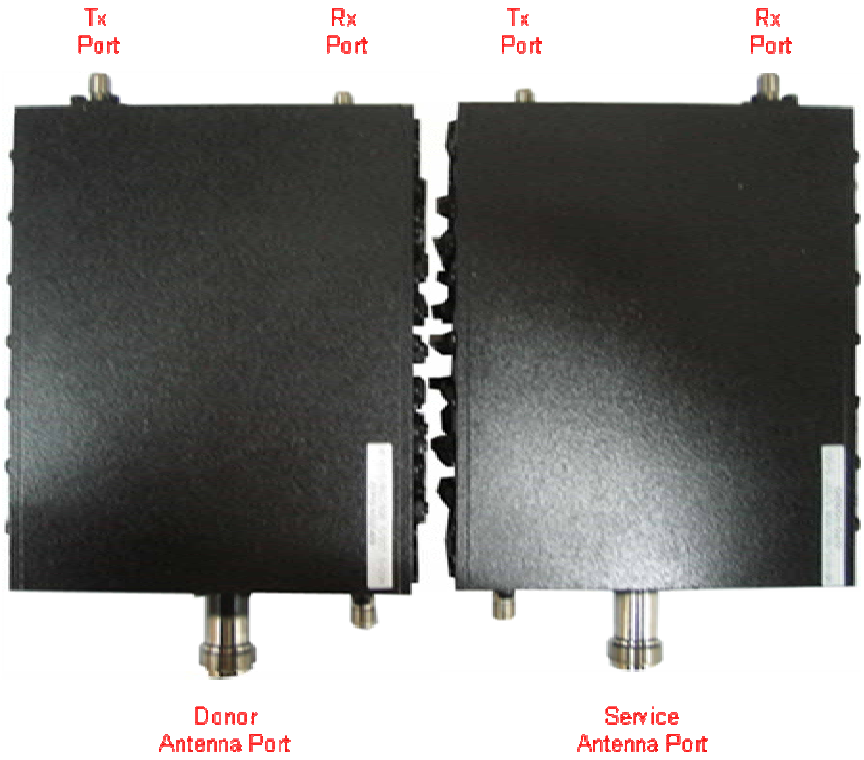

Figure 7. Multiplexer

2.2.4. MCU (Main Control Unit)

MCU is the control unit of iDEN MINI. It controls and monitors operational parameters. It also generates alarms, an event log and many other functions of the iDEN MINI.

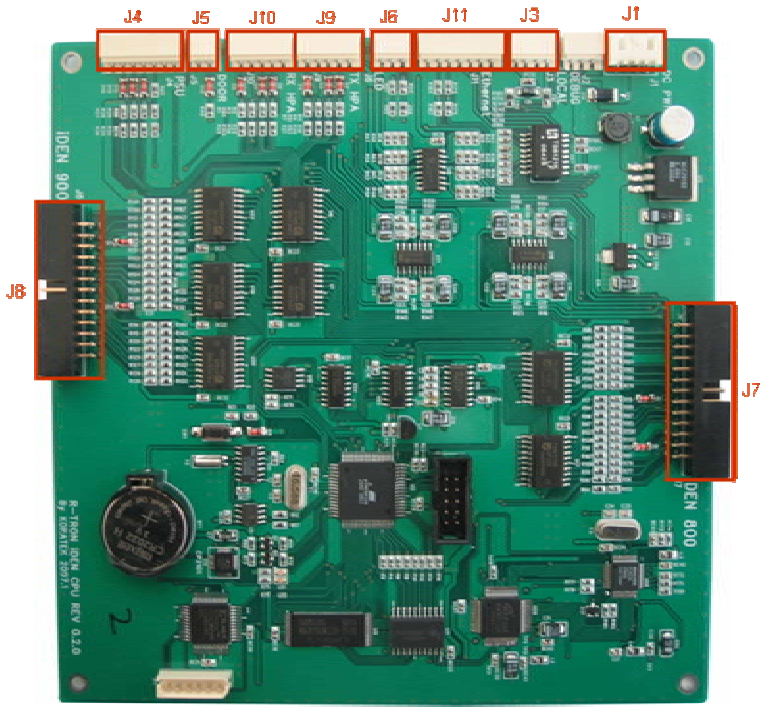

Figure 8. Main Control Unit

Pin Map

Port	Connected to
J1	MCU Vcc(+6V)
J3	USB Port(Manufacturer use only)
J4	PSU Alarms
J5	Door Alarm
J6	Status LEDs
J7	iDEN 800 PLL,B/S,OUT DET
J8	iDEN 900 PLL,B/S,OUT DET
J9	Tx HPA
J10	Rx HPA
J11	RJ-45 jack

2.2.5. Power Supply

The Power Supply Unit (PSU) supplies a steady DC power to iDEN MINI by drawing power from the general in-wall AC outlets

Figure 9. Power Supply

Specifications

Item		Specifications
Environmental	Operating Temp	-10°C~50°C
	Humidity	20%~90%RH
	Cooling method	Natural air
Voltage		AC110~125V
Current		5A Max / 6V, 12V, 27VDC
Frequency		50~60Hz typ
Leakage Current		0.5mA max.@110V AC