

iDEN Add-On Filter Box User's Manual



R-tron Inc.

This document describes the specifications, installation and operation of iDEN Add-On Filter Box.

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.

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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

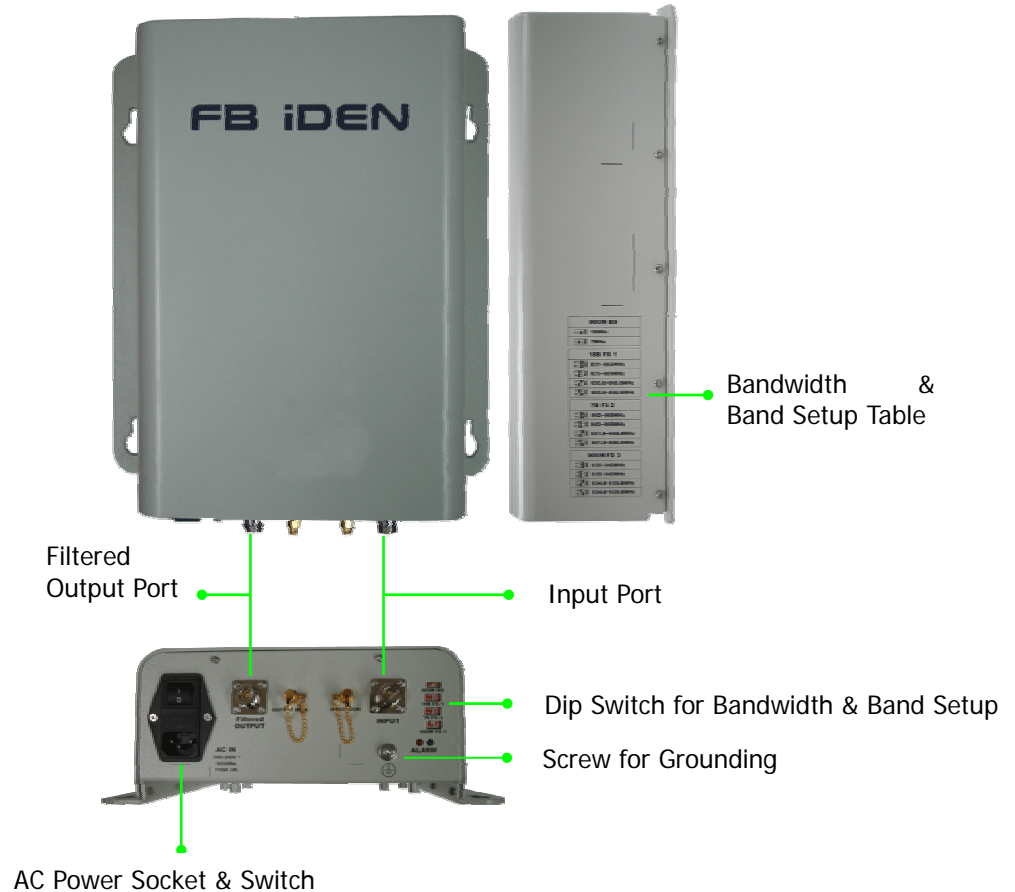


Figure 1. R-tron iDEN Add-On Filter Box

The interference within the service frequency bands is a target to be removed because it causes the degradation of the service quality and shrinking of the coverage.

iDEN Add-On Filter Box is the equipment for filtering off such interference adjacent to iDEN downlink frequencies allocated at 800MHz's and 900MHz's with the following features:

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

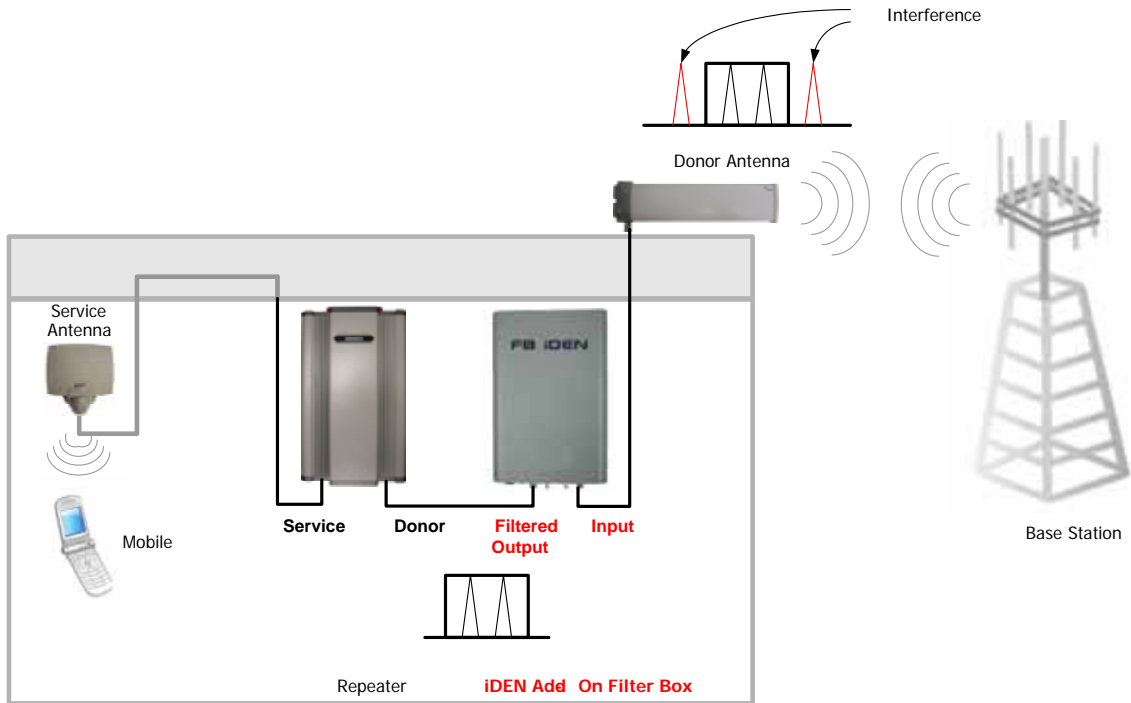


Figure 2. Overview: Interference Filtering

2. Description

2.1 System Specifications

2.1.1. Electrical Specifications

Parameter		iDEN 800	iDEN 900
Band Selection (BW)	DL	In-band BW:18M In-band BW:7.0M	In-band BW:5M
	UL	In-band 18M	In-band 5M
Frequency Selection	DL	18MHz	851~869MHz 850.8~868.8MHz 850.8~868.6MHz
		7MHz	862~869MHz 861.8~868.8MHz 861.6~868.6MHz
		5MHz	935~940MHz 934.8~939.8MHz 934.6~939.6MHz
Roll off	DL	65dBc @Fedge+/- 500KHz	65dBc @Fedge+/-500KHz
Gain ripple		± 1.5dB (Typical)	
Gain	DL	0 ± 1.5dB	
	UL	~ -7.9 dB Max	
Delay	DL	8.0uS Max	
	UL	1uS Max	
VSWR	DL	1.5Max	
	UL	1.5 Max	
Input Range	DL	-10dBm Max	-10dBm Max
	UL	By Pass	By Pass
Power supply		85V~264V, 50/60Hz typ.	
Operating temperature		*-10 ~ 50	
Storage temperature		-20 ~ 60	
Consumption power		≤20W	

2.1.2. Mechanical Specifications

Parameter	Specification
RF connectors	N-female x 2, SMA-female x 2
Size	4.52 X14.96 X 12.2(Inch), 115 X 380 X 310(mm)
Weight	6.4kg (14.1lbs)

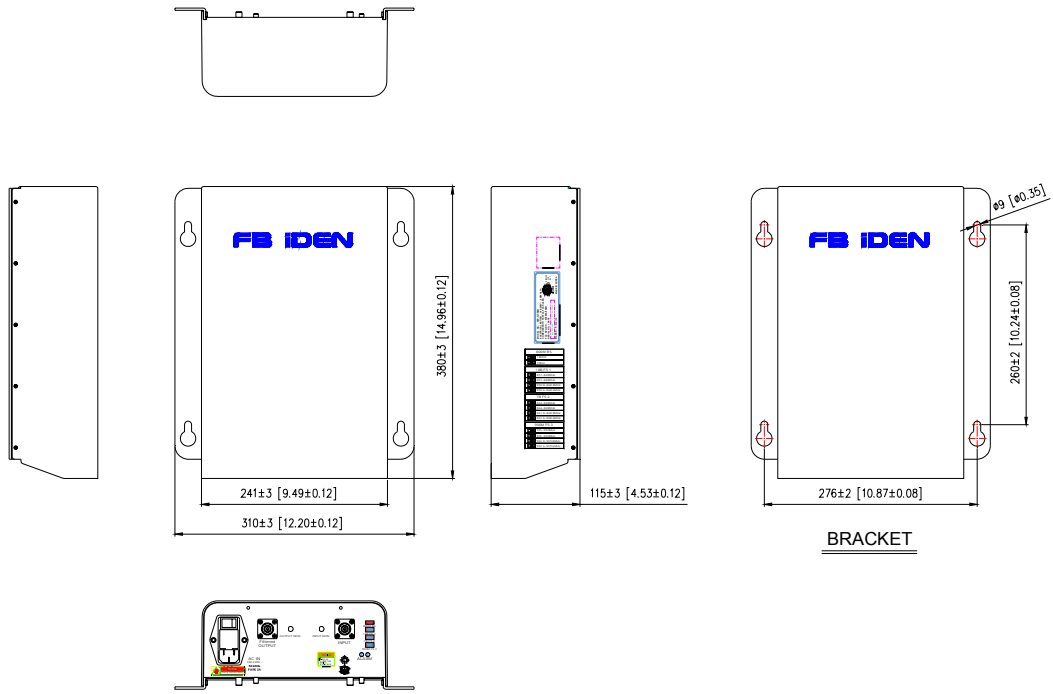


Figure 3. Dimension of iDEN Add-On Filter Box

2.2 Sub Unit Overview

iDEN Add-On Filter Box is composed of the following sub units:

- Filter Module
- Duplexer
- Main Control Unit (MCU)
- Power Supply Unit (PSU)
- EMI Filter

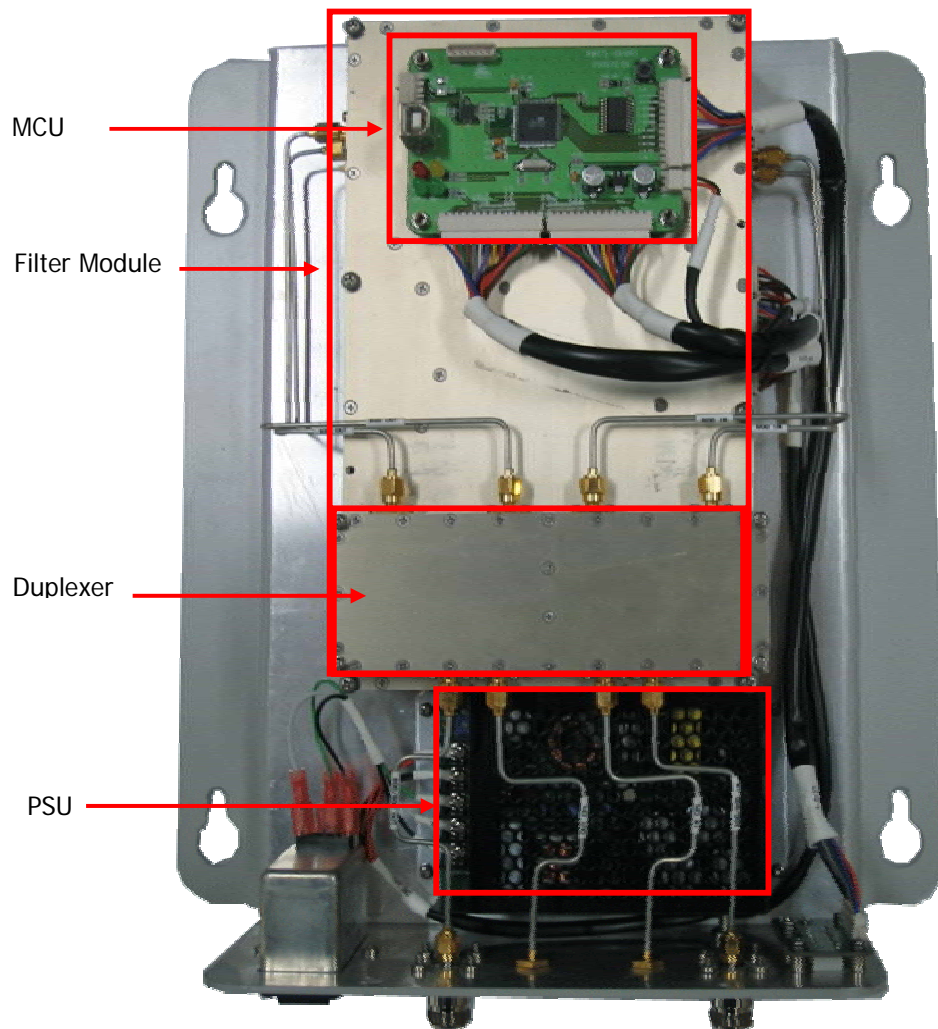


Figure 4. Internal View of iDEN Add-On Filter Box

2.2.1. Block Diagram

The following, *Figure 5*, explains how the unit filters signals.

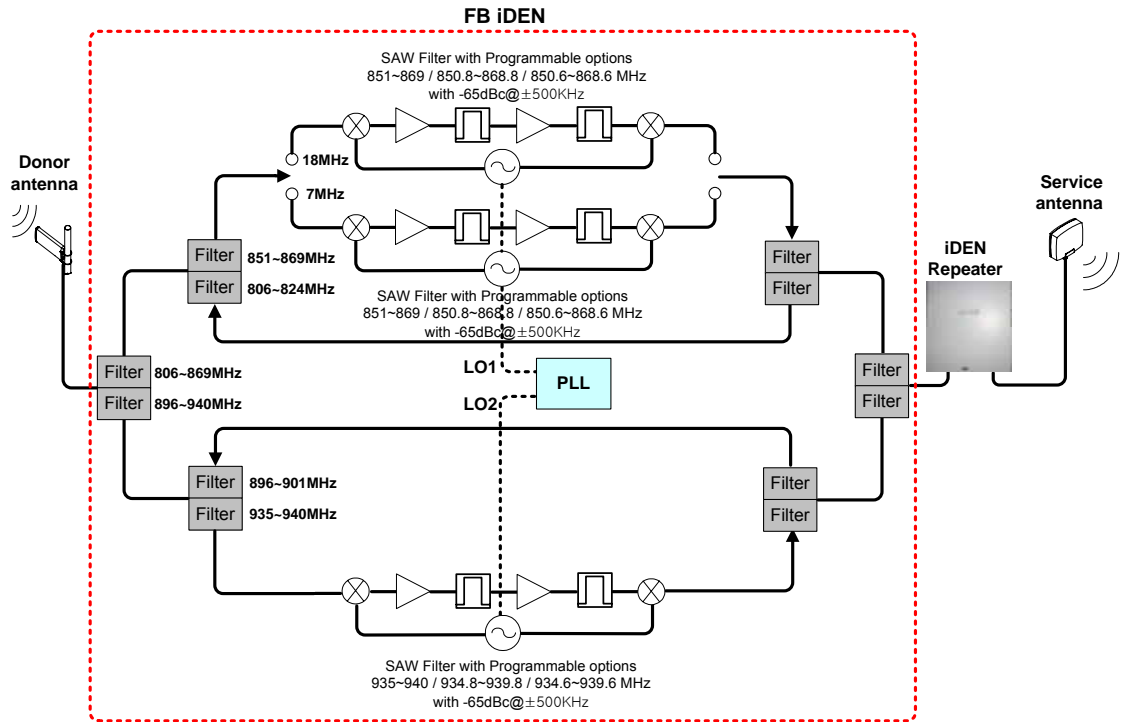


Figure 5. Block Diagram

2.2.2. Filter Module

The Filter Module is basically a complex band-pass filter that sharply filters out unwanted noise.

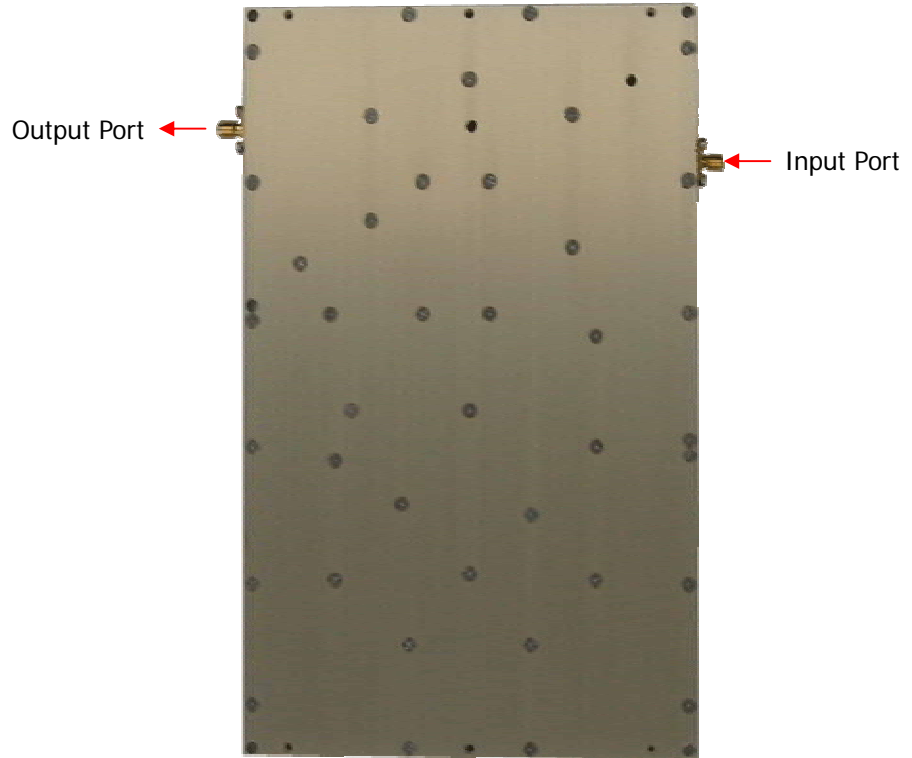


Figure 6. Filter Module

2.2.3. Duplexer

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

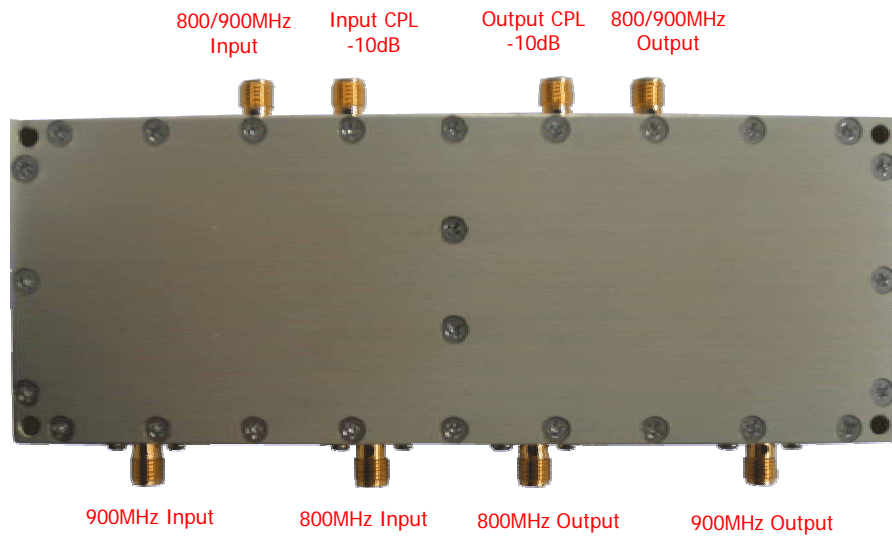


Figure 7. Duplexer

2.2.4. MCU (Main Control Unit)

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

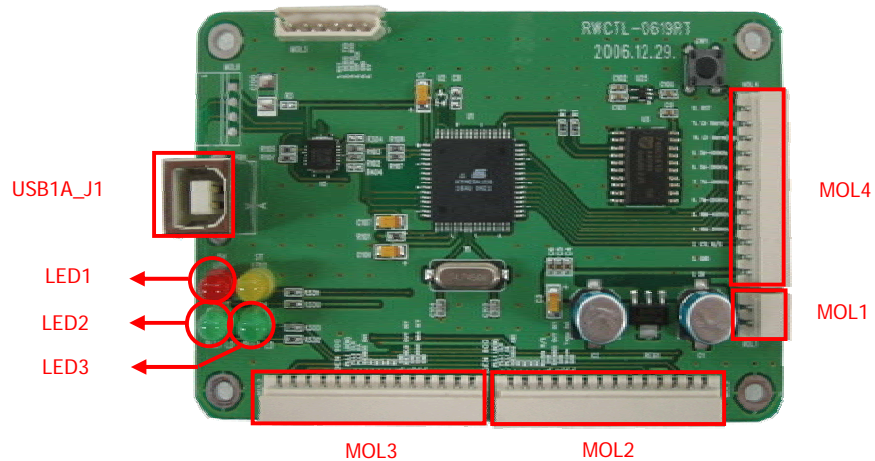


Figure 8. Main Control Unit

Pin Map

Port	Connected to
USB1A_J1	Local OMT
MOL1	MCU Vcc(+6V)
MOL2	iDEN 800 PLL,B/S,OUT DET
MOL3	iDEN 900 PLL,B/S,OUT DET
MOL4	Dip Switch Control

LED

LED	
LED1	Red light indicates MCU power "on"
LED2	Green light indicates 800 PLL Lock
LED3	Green light indicates 900 PLL Lock

2.2.5. Power Supply

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



Figure 9. Power Supply

Specifications

Item		Specifications
Environmental	Operating Temp	-10 ~60
	Storage Temp	-20 ~70
	Humidity	20%~90%RH
	Cooling method	Natural air
Voltage		AC85~264V
Current		4.2A Max / 12Vdc
Frequency		47~440Hz max (50~60Hz typ)
Leakage Current		0.5mA max.@110V AC