Mini 30mW

User's Manual

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RF Repeater

Band Selective Type

Sprint PCS

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Revision History

Version	Date of revision	Reason for revision	Revision Description
V0.1	Agust.11, 2005		

RF EXPOSURE INFORMATION

The antenna used for this transmitter must not exceed 12dBi and must be installed to provide a minimum separation distance of 20cm from all persons.

Contents

1. Overview

Mini 30 will bring in those weak cellular phone signals reducing dropped calls and allowing you to use cell phones ...even deep inside a building.

At the heart of all of our systems is a Mini 30 designed to improve coverage for wireless products within a facility. Combined with interior ceiling mounted low profile antennas, and an exterior mounted Yagi or Patch Antenna, the Mini 30 boosts the signal level for distribution within the interior areas, reducing the problem of dropped calls and signal fades. The Mini 30 can also be used in mobile applications, improving voice quality and range in areas of poor coverage.

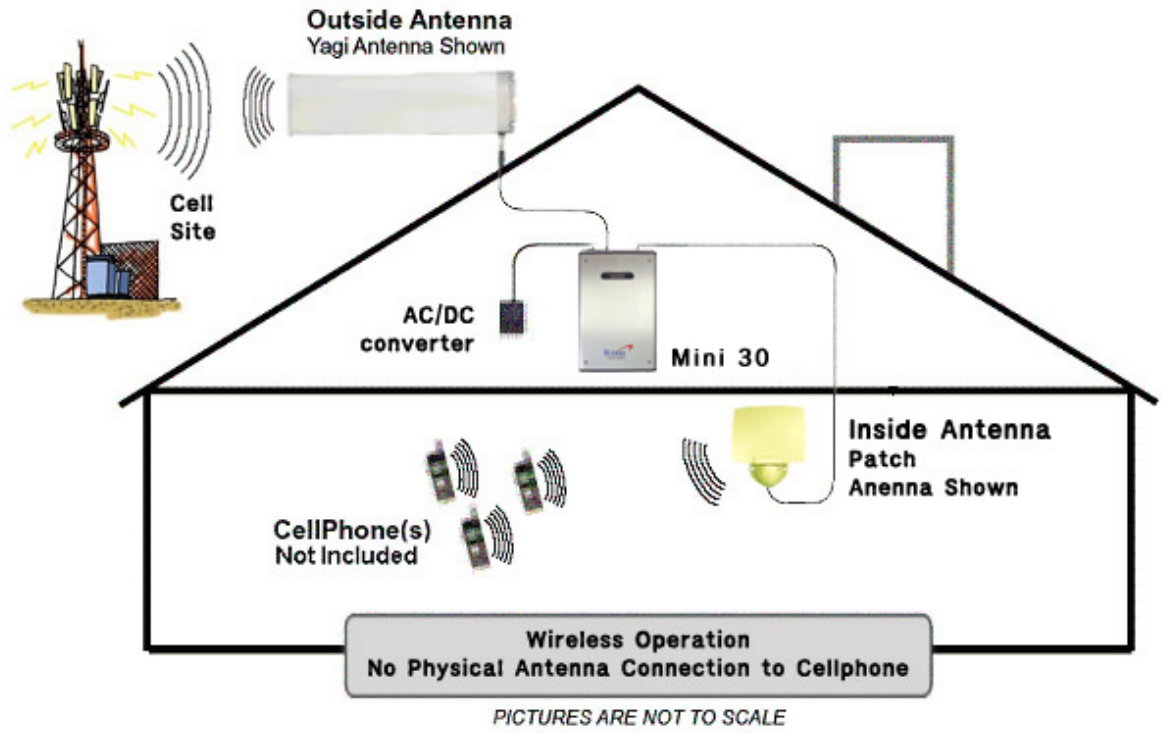


Figure 2.1 Fundamental configuration of **Mini 30**

All of our packages are engineered using only FCC approved amplified components. They are designed not to disrupt local wireless communication but to add service to areas that otherwise would not have the coverage that the customer requires. All of Mini 30 is easily installed.

2 Repeater Design

The Mini 30 is housed in an aluminum chassis that is waterproof for indoor use. The chassis has a design suited for indoor use.

The Mini 30 has several RF amplifiers and components on a board with an aluminum body. Furthermore, the RF components are implemented within RF CMOS IC or MMIC technologies. A board that contains several RF amplifiers and components is shielded under a metal cover. This amplifier board is different types depending on the supported system.

The followings are the Technical Specification of Mini 30.

2.1 System specification

2.1.1 Mechanical and Environmental conditions

Parameter	Specification
Power supply	AC 100~240V ; 50/60Hz ±5%
Operating temperature	0 ~ +50℃
Humidity	10% ~ 85%
Consumption power	< 24W
RF connector	N-female
Size(W X L X H)	160 X 252 X 80(mm) / 6.29 X 9.92 X 3.15(Inch)
Weight	3.7(kg) / 8.16 (lbs)

Table 2-1. Mechanical & Environmental Conditions

2.1.2 Electrical Specifications

A. Mini 30 Repeater

Parameter		Specification	Remark
Frequency Band	Down Link	1930 – 1990 MHz	Total 60 MHz
	Up Link	1850 – 1910 MHz	Total 60 MHz
Transmit Maximum Power	Down Link Up Link	+14.8 dBm (30mW)	Total Power on CDMA
Output Power on Coupled Service Port		MAX. 5 dBm	Total Power on CDMA
Gain		70dB ± 1 dB	
Gain Range		60 ~ 70dB	
Gain Step		10 dB (1 dB Step)	
Noise Figure		< 5 dB	
Bandwidth(Type 1)		5 MHz BW(Max. 3FA)	Any 5MHz of Total 60MHz (A1,A2,A3,D,B1,B2,B3,E,F,C1,C2,C3)
Bandwidth(Type 2)		10 MHz BW(Max. 7FA)	Any 10MHz of Total 60MHz (A1A2,A2A3,A3D,DB1,B1B2,B2B3, B3E,EF,FC1,C1C2,C2C3)
Bandwidth(Type 3)		15 MHz BW(Max. 7FA)	Any 15MHz of Total 60MHz (A,A2A3D,A3DB1,DB1B2,B,B2B3E, B3EF,EFC1,FC1C2,C)
Bandwidth(Type 4)		20 MHz BW(Max. 7FA)	Any 20MHz of Total 60MHz (AD,A2A3DB1,A3DB1B2,DB,BE,B2 B3EF,B3EFC1,EFC1C2,FC1C2C3)
Passband Ripple		≤ 2.5 dB P-P	Operating Bandwidth
Delay		< 12 microseconds	
VSWR		≤1.5	
In-band Nosie		Fc±885kHz ≥ -45 dBc	RBW = 30 kHz
		Fc±1.98MHz ≥ −50 dBc	RBW = 30 kHz
Spurious Emissions		< -13 dBm (Fc ± 2.25 MHz)	RBW = 1 MHz

Table 2-2. Repeater Features

B. Mini 30 (30mW) Antenna

Parameter		Specification			
		Donor	Internal Distribution	External Distribution (Optional)	
		Yagi	Patch	Patch	Omni
Frequency range		1850 - 1990MHz			
Frequency bandwidth		140MHz			
Antenna gain		Min. 12dBi	2dBi	8dBi	2dBi
Beam width	Horizontal	Min. 28°	70°	70°	360°
	Vertical	Min. 28°	70°	70°	70°
Polarization		Vertical			
VSWR		Max. 1: 1.5	Max. 1 : 1.3	Max. 1 : 1.3	Max. 1 : 1.5
Power Capability		50Watts	10Watts	10Watts	10Watts
Antenna Connector Port Type		N-Female	-	N-Female (-10dB Coupling)	N-Female (-10dB Coupling)
670 / 1.48		670 / 1.48	50 / 0.11	225 / 0.5	270 / 0.6
Dimension (W x H x D)(inch)		19.7x4.21x3.23	4.25x3.34x0.35	5.04x4.06x1.54	Φ 4.49 x 1.85
Impedance		50Ω			

Table 2-3 Antenna Features

3. Repeater Configurations

The Mini 30 consists largely of a body and an AC to DC SMPS Adapter. The body of the Mini 30 has an RF unit, and a main control unit.

3.1 Body

The following is the picture of the body of Mini 30.

Figure 3.1 A body of the Mini 30

3.2 Antenna Unit

The Mini 30 has two antennas, a donor antenna and a distribution antenna, to provide a good communication service.

3.2.1 Donor Antenna (Yagi Antenna)

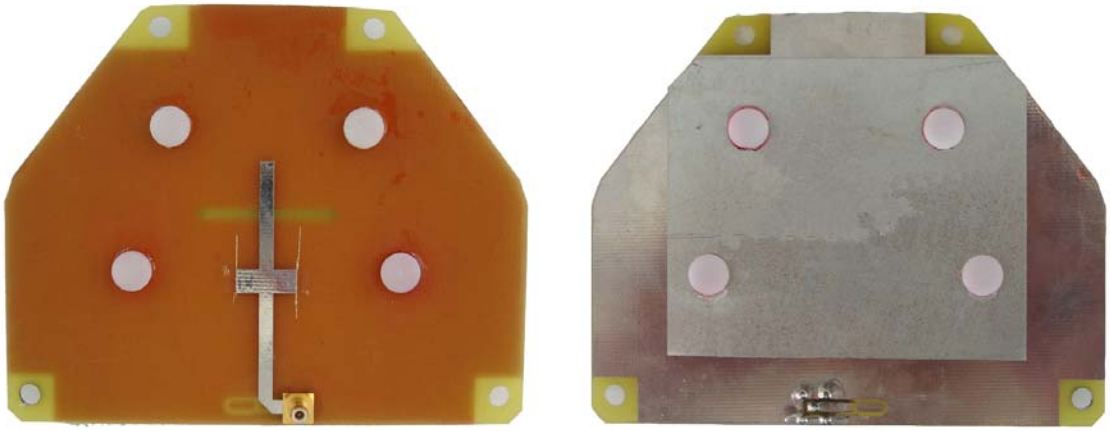
A donor antenna is used for receiving the transmitted signal from a base station.

Figure 3.2 A Yagi antenna (Donor antenna)

3.2.2 Distribution Antenna

A distribution antenna serves to transmit the amplified signal to individual mobile station in the shaded area.

A. Internal Patch Antenna



a. Rear view b. Front view

Figure 3.3 Internal Patch Antenna

B. External Patch Antenna (Optional)

Figure 3.4 External Patch Antenna

C. External Omni Antenna (Optional)

Figure 3.5 External Omni Antenna

3.3 AC to DC SMPS Adapter

A SMPS Adapter supply DC power to an Mini 30.

Figure 3.6 AC to DC SMPS Adapter

A. Specification overview

Item		Input	Output
AC to DC	Voltage	AC 90 to 264V 50/60Hz ±5%	DC 12V
			Output Voltage Variation Ratio: less than ±5%
	Current		3.0A
Efficiency		75% Min. at full load	
Power		36Watts	

Table 3.1 The specification of AC to DC SMPS Adapter

4. Block Diagram

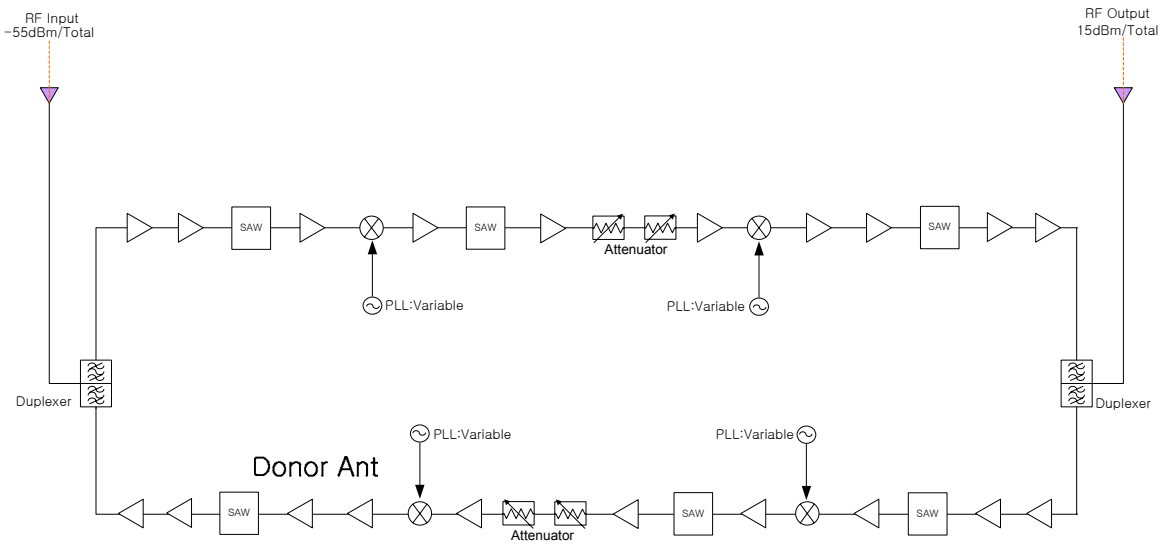


Figure 4.1 Block Diagram of Band Selective Repeater

Figure 4.1 shows a block diagram of a band selective repeater. This diagram is applicable to repeaters for CDMA systems.

4.1 Downlink signal path

The downlink signal path, i.e. from the base station through the repeater to the mobile station, is described for Mini 30 in the above block diagrams.

4.2 Uplink signal path

The uplink signal path, i.e. from the mobile station through the repeater to the base station, is identical to the downlink path but the other way round. Only some levels and component values differ.

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