

Users Guide & Installation Manual



MODEL : AVHR-5000

AVHR-5000

- Content -

- 1. General Information**
 - 1.1 Precautions
 - 1.2 Features
- 2. System Components**
- 3. Installation**
 - 3.1 Outside Antenna Installation
 - 3.2 Inside Antenna Installation
 - 3.3 Amplifier and Antenna Connection
 - 3.4 Operating Instructions
- 4. Trouble Shooting**
 - 4.1 LED Alarm
 - 4.2 Insufficient Outside Signal Problem
 - 4.3 Vehicle Battery Discharge Problem
- 5. Specification**
 - 5.1 Amplifier Specification
 - 5.2 Outside Antenna Specification
 - 5.3 Inside Antenna Specification
 - 5.4 Cigarette Power Code Specification
- 6. Certificates**
- 7. Memo**

1. General Information

1.1 Precautions



Reference: Direction/Information for the proper operation



Caution: Information for users to avoid malfunctions



Warning: Instructions for users to avoid unexpected hazard



- 1.1.1 Do not drop the device
- It may damage the product and its function



- 1.1.2 Do not place near magnetic materials
- It may cause of possible malfunction



- 1.1.3 Product is recommended to be used with the cigarette power cord.
For any alternative cable use, please ask professional installers.
- There is a high risk of frying up the device if inaccurately powered.



- 1.1.4 Please unplug both Cigarette Power Supply and Fuse Cable during non-operation to avoid any possible battery discharge.



- 1.1.5 Install the product where it is recommended
- It may not properly operate on unadvised location



- 1.1.6 Do not repair or remodel
- It may cause malfunction. Please contact your store representative if there is a problem



- 1.1.7. Do not install device while driving
- Please avoid any activities that may cause careless driving



- 1.1.8 Turn off the ignition before set up the device.



- 1.1.9 Do not install the device near any air bags in a car
- It may cause severe damage if air bags explode.



- 1.1.10 Do not touch the device with wet hands
- It may cause possible risk of an electric shock



- 1.1.11 Keep the installation location of inside and outside antenna clean
- Please organize cable lines and antenna locations to avoid any possible interference while operating a vehicle.



- 1.1.12 Stop and Turn Off the device immediately if a smog comes out of the product or any strange odor is detected from the product
- Do not attempt to fix the device. Please contact your store representative

1.2 Features

1.2.1 Summary

The device may be installed on cars, trucks, trailers, boats and homes to improve user's cellular signal.

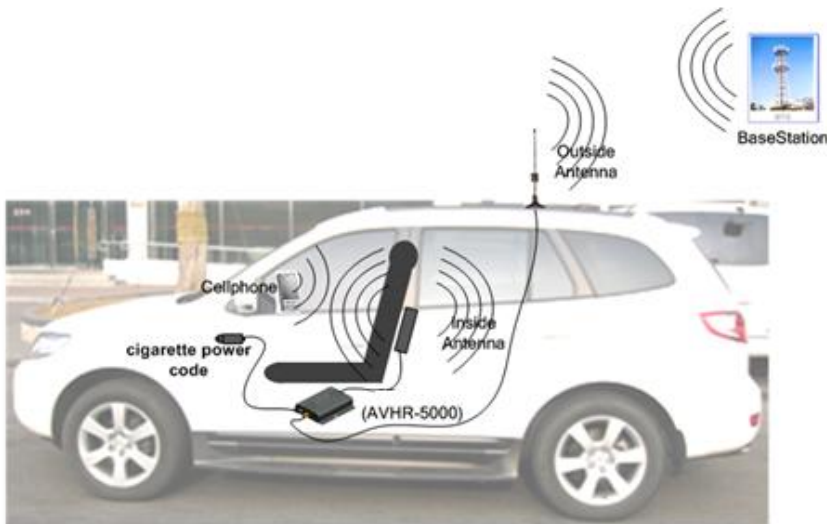
- I. Decrease dropped call
- II. Increase 2G/3G/4G data speed
- III. Battery life extension
- IV. Voice quality improvement

It is a RF type amplifier for Cellular 800MHz and PCS1900MHz signal enhancement. It covers GSM, CDMA, WCDMA, DSC mobile phone users. (Please see page 11 for Operating Frequency)

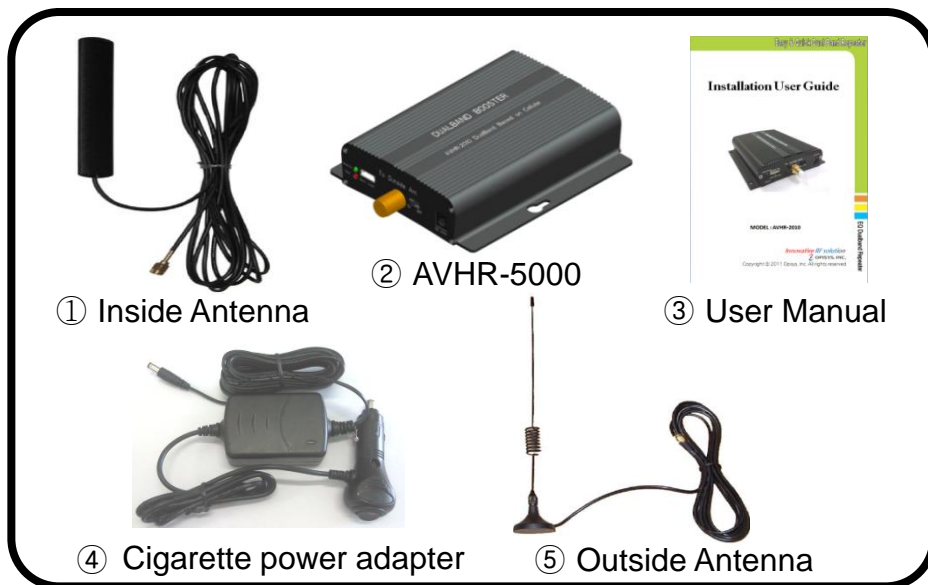
1.2.2 Features

- I. Strong coverage area
 - **Gain 55dB**
- II. Automatic Overload Protection & Detection System
 - **Plug and Operate Systems**
- III. IS-95A Spurious Specifications with 25dBm(0.3W) Output power
 - **Provides High Data Communication rate**
- IV. Complete Repeater Kit.
 - **All components included for installation**
- V. Dual Band Frequency Broadband
 - 800MHz / 1900MHz
- VI. LED Alarm System
- VII. GUI(Graphic User Interface)
 - Please ask professional installers about GUI program.
- VIII. Cost Effective Application for Vehicles, Boats, and Homes
 - For any Home & Boats applications, optional antennas (inside & out) and connectors may be required.

1.2.3 Installation



2. System Components



■ System Components

- ① . Inside Antenna: connects signal between mobile phone and amplifier
- ②. AVHR-5000: amplifies signal by receiving base station signals through Outdoor antenna to In-door Antenna
- ③. User Manual: shows how to operate system
- ④. Cigarette Power Adapter: Power Source
- ⑤. Outside Antenna: connects signal between base station and amplifier

3. Installation

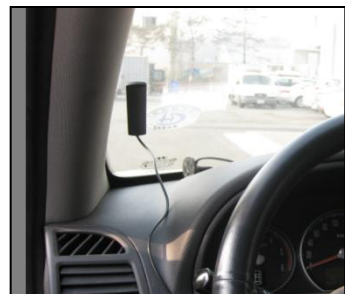
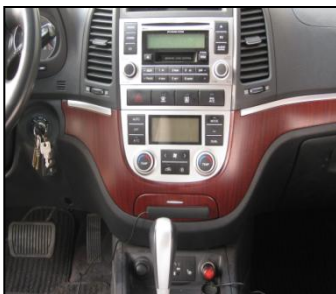
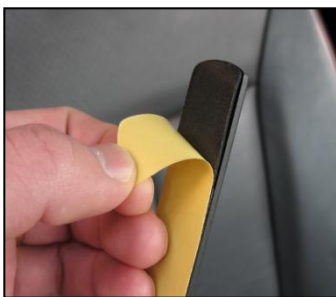
3.1 External Antenna Installation

- 3.1.1 Outside antenna has magnetic feature to mount on the roof of vehicle
- 3.1.2 Outside antenna distance should be at least 5 feet from inside antenna
- 3.1.3 Recommended to mount outside antenna near rear end of the roof.



3.2 Inside Antenna Installation

- 3.2.1 Inside antenna is self adhesive. You can place it wherever you want
- 3.2.2 Before installation, please remove attached paper
- 3.2.2 Recommended to mount indoor antenna near suggested area as below

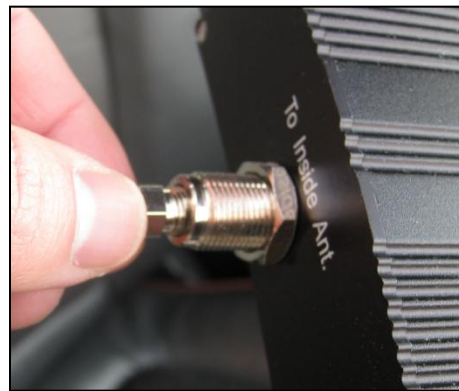


3.3 Amplifier and Antenna Connection

3.3.1 Place the amplifier under the seat or appropriate location.



3.3.2 Connect inside antenna connector to Amplifier.

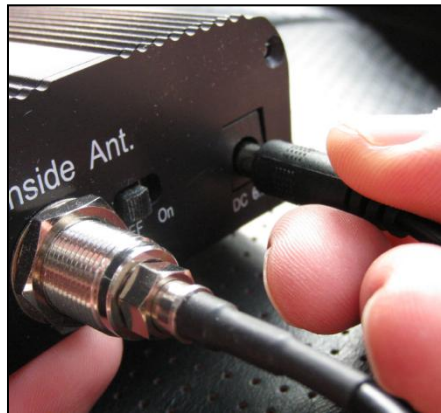


3.4 Operating Instructions

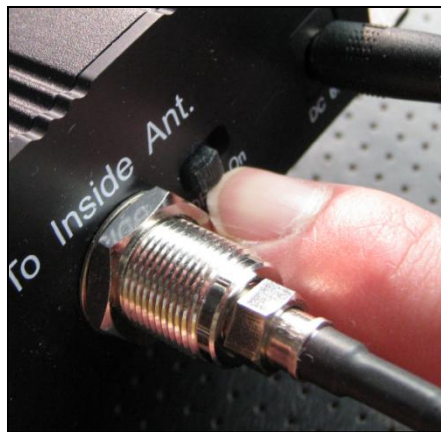
3.4.1 Plug in the cigarette power cord and press the button to turn ON as shown below. The red LED light should be ON indicating its operation.



3.4.2 Connect DC Jack as shown below



3.4.3 Turn ON the Switch as shown below



3.4.4 After turning ON the switch, green LED light will be on. Green LED indicates that system is in a normal mode. Green and Red LED will flash 3 times simultaneously. After the initial loading, the green LED light will be on during operation.



4. Trouble Shooting

4.1 LED Alarm

Item		GREEN LED	RED LED	Problem Reference
Setting/Resetting		ON (after 3 times blinks)	3 times blinks	See 4.1.1
Normal Mode		ON	OFF	See 4.1.2
Cellular	Overload	Blink(once)	-	See 4.1.3
	Oscillation	Blink(twice)	-	See 4.1.4
	Insufficient Isolation	Blink(3 times)	-	See 4.1.5
	Alarm Checking	Blink(Consecutively)	-	See 4.1.6
PCS	Overload	-	Blink(once)	See 4.1.3
	Oscillation	-	Blink(twice)	See 4.1.4
	Insufficient Isolation	-	Blink(3 times)	See 4.1.5
	Alarm Checking	-	Blink(Consecutively)	See 4.1.5

- 4.1.1 ① Check if the LED light is ON, on the cigarette power adapter
 ② Verify that DC cord is connected correctly
- 4.1.2 ① Green LED light is normal mode. If it blinks 2-3 times in a few seconds, please see 4.1.3 ~ 4.1.6
- 4.1.3 ① This is normal mode that checking on input power signal and shows signal status to users.
 ② It will go resume normal operation mode after Overload Detection.
- 4.1.4 ① There is an oscillation between inside and outside antenna.
 ② This status is caused by surrounding structural interferences that can temporarily disturb mobile signals. The amplifier will auto detect available signals as you drive to other locations. The Green LED light will turn ON once normal mode resumes.

- 4.1.5 ① The isolation may occur between inside and outside antenna
- ② If LED light blinks three times during installation, move the inside and outside antenna away from each other and RESTART the amplifier.
- ③ If LED light blinks three times after the installation, it could be caused by surrounding structure.
The device will auto adjust as vehicle moves.

4.1.6 ① The Overload Protection System includes the following:

AGC (Automatic Gain Level Control)

AIC (Automatic Isolation Detection)

ASC (Automatic Reset Control)

- ② During Alarm checking process, the Amplifier may not operate

4.2 Insufficient Outside Signal Problem

Even after installation, if there is no base stations around your vehicle (Ex. No Service Enabled Zone), you may not receive any cellular signals.

4.3 Vehicle Battery Discharge Problem

Verify cigarette power adapter has LED light ON as shown below. If not, check either vehicle key is appropriately positioned or engine is ON. In case of battery discharge, replace the battery.



5. Specification

5.1 Amplifier Specification

Items		Cellular	PCS	Remarks
Operating Frequency	Downlink	869 ~ 894 MHz	1930 ~ 1990 MHz	
	Uplink	824 ~ 849 MHz	1850 ~ 1910 MHz	
Gain	Downlink	55dB±2.0dB	55dB±2.0dB	
	Uplink	55dB±2.0dB	55dB±2.0dB	
Output Power Level	Downlink	+10dBm	+10dBm	@ 1FA
	Uplink	+25dBm	+25dBm	
Ripple	Downlink	< 5dB	< 5dB	
	Uplink	< 5dB	< 5dB	
Noise Figure	Downlink	< 5dB	< 5dB	Frequency Center
	Uplink	< 5dB	< 5dB	Frequency Center
ALC Level	Downlink	+10dBm ±1dB	+10dBm ±1dB	@ 1FA
	Uplink	+25dBm ±1dB	+25dBm ±1dB	
Shutdown Level	Downlink	+10dBm ±1dB	+10dBm ±1dB	After ALC
	Uplink	+25dBm ±1dB	+25dBm ±1dB	
Spurious	Downlink & Uplink	-45dBc/30kHz @±885KHz		@PCS
		-50dBc/30kHz @±1.98MHz		
		-45dBc/30kHz @±750KHz		@Cellular
		-50dBc/30kHz @±1.98MHz		
VSWR		< 1 : 1.8		
Propagation Delay		< 1us		
Frequency Stability		≤ ±0.05ppm		
GUI Interface		RS-232C		
Isolation Detection Range		45dB ~ 65dB		
Only Uplink Shutdown		≥ -45dBm ±1dB @ downlink Input Signal		For BTS Protection
Input Voltage		6.0Vdc / 3.5A		Cigar Charger 's Vdc
Power Consumption		6.0Vdc / 840mA		@ No call
RF Connector Type		FME-male		
Operating Temperature		-40°C ~ +50°C (-40°F ~ 122°F)		
Size(L*W*H)		5.5"*4.8"* 1.4" (140.7 * 123 * 35.5 mm)		

5.2 Outside Antenna Specification

Items	Cellular	PCS	Remarks
Operating Frequency	820 ~ 890 MHz	1710 ~ 1990 MHz	-
Bandwidth	70MHz	170MHz	-
Gain	5dBi		-
VSWR	≤ 2.0 : 1		-
Impedance	50 Ω		-
Max Power-W	50W		-
Polarization	Vertical		-
Connector	FME(Female)		-
Antenna Length	11.02 inch (28Cm)		-
Weight	0.485 lb (220g)		-
Cable Length	16.4 ft (5M)		-

5.3 Inside Antenna Specification

Items	Cellular	PCS	Remarks
Operating Frequency	820 ~ 890 MHz	1710 ~ 1990 MHz	-
Bandwidth	70MHz	170MHz	-
Gain	2dBi		-
VSWR	< 1 : 1.7	≤ 2.0 : 1	-
Impedance	50 Ω		-
Max Power-W	25W		-
Polarization	Vertical or Horizontal		-
Connector	FME(Female)		-
Weight	0.11 lb (50g)		-
Cable Length	6.56 ft (2M)		-
Length	4.73 inch (12cm)		-



5.4 Cigarette Power Code Specification

5.4.1 Input Specification

Items	Min	Typical	Max
Normal DC Input Voltage	12V	-	24V
DC Input Voltage Range	12V	-	24V
DC Input Voltage Current	-	-	3.0A

5.4.2 Output Specification

Items	Min	Typical	Max
Normal DC Output Voltage	-	6.0Vdc	-
DC Output Voltage Range	5.7Vdc	-	6.3Vdc
Load Current Range	-	-	3.5A
Ripple	-	-	350mV
Over Current Protection	4.2	-	7.0A
Short Circuit Protection	-	Yes	-

6. Certificates

6.1 FCC Certification

Model: AVHR-5000

- Certificate Data : 2011.04
- Certificate Number: Q4EAVHR-5000



6.2 IC Certification

Model: AVHR-5000

- Certificate Data : 2011.04
- Certificate Number: 8605A-AVHR 5000

