

Product Manual



CSI-T51080-SP78
Installation Manual

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Product Registration Information

The serial number may be found on the label on the panel near the power connectors. Note this number below. Retain this manual, along with proof of purchase, to serve as a permanent record of your purchase.

MODEL NUMBER

SERIAL NUMBER

DATE OF PURCHASE

POINT OF SALE COMPANY

DISCLAIMER: All information and statements contained herein are accurate to the best of the knowledge of Cellular Specialties, Inc. (CSI), but Cellular Specialties makes no warranty with respect there to, including without limitation any results that may be obtained from the products described herein or the infringement by such products of any proprietary rights of any persons. Use or application of such information or statements is at the users sole risk, without any liability on the part of Cellular Specialties, Inc. Nothing herein shall be construed as licence or recommendation for use, which infringes upon any proprietary rights of any person. Product material and specifications are subject to change without notice. Cellular Specialties' standard terms of sale and the specific terms of any particular sale apply.

Document Purpose / Intended Users

The purpose of this document is to provide a step-by-step procedure to help the experienced technician/engineer install and commission an in-building wireless enhancement system using CSI's "Wireless Engine" Digital Repeater. Following the procedures outlined will minimize risks associated with modifying a live system and preclude service interruptions. This document assumes the technician/engineer understands the basic principles and functionality involved with Repeater and in-building systems. It is geared to the practical concerns of the installer.

Application

This guide should be applied whenever a need exists to add Digital Repeater capability to an existing system or when this capability is being included with a new installation.

Safety Guidelines

The general safety information in this guideline applies to both operating and service personnel. Specific warnings and cautions will be found in other parts of this manual where they apply, but may not appear in this summary. Failure to comply with these precautions or specific warnings elsewhere in the manual violates safety standards of design, manufacture, and intended use of equipment. Cellular Specialties, Inc. assumes no liability for the customer's failure to comply with these requirements:

Grounding

This Digital Repeater system is designed to operate from 100-240 VAC @ 1.7A max. current and should always be operated with the ground wire properly connected. Do not remove or otherwise alter the grounding lug on the power cord.

Explosive Atmospheres

To avoid explosion or fire, do not operate this product in the presence of flammable gases or fumes.

Lightning Danger

Do not install or make adjustments to this unit during an electrical storm. Use of a suitable lightning arrester, such as CSI's model number CSI-CAP, is very strongly recommended.

No User Serviceable Parts Inside

HAZARDOUS VOLTAGES ARE PRESENT WHEN THE COVER IS REMOVED. Opening the chassis will void your warranty. If you suspect a malfunction with this product, call your dealer or the Cellular Specialties Support Line at: **(603) 626-6677**.

Important Safety Information

Antennas used for the purpose of radiating signals indoors are limited to a **maximum** gain of 3dBi. The outdoor antenna used for the purpose of communicating to the wireless infrastructure is limited to 14dBi gain, or any combination of gain and loss that equals 14dB at input. Each antenna must be positioned to observe minimum separation requirements from all users and bystanders. The following guidelines should be used when considering separation distances.

INDOOR antennas must be placed so that under normal conditions, personnel cannot come within 20 cm (8.0 in.) from any inside antenna. Adhering to this minimum separation will ensure that the employee or bystander cannot exceed RF exposures beyond the maximum permissible limit as defined by section 1.1310 i.e. limits for General Population / Uncontrolled Exposure.

OUTDOOR antenna must be positioned so that under normal conditions, personnel cannot approach closer than 120 cm (4 ft.). A directional antenna having a maximum gain of 14 dBi is used, and precautions should be taken to prevent personnel from routinely passing through the main radiation beam at a distance closer than specified.

Product Introduction

The SMR-700/800 Repeater has been developed for use within enclosed structures where signal from local cell sites to operate cell phones is poor or unavailable. Adequate signal must be available outside the structure as a prerequisite to achieving in-building coverage. The SMR-700/800 Repeater is connected to an external antenna, usually on the roof, and to one or more internal antennas placed strategically throughout the area where wireless service is desired.

The external antenna typically is directional, such as a “yagi”. Internal antennas are typically omnidirectional, although various other types may be used depending on the coverage application. The SMR-700/800 Repeater amplifies both the “uplink”(phone to tower) & “downlink”(tower to phone) signals thus facilitating communications to and from the intended wireless infrastructure.

With a maximum total of **+80dB** nominal gain on both the up and down links, gain can be adjusted over a range from +50dB to +80dB in 1.0dB steps. Control of the repeater is achieved utilizing a computer connected to comm. port 1 or 2 or via Ethernet cable connected to the Ethernet port. There are also LED indicators to indicate ALARM status, OSC, and Power.

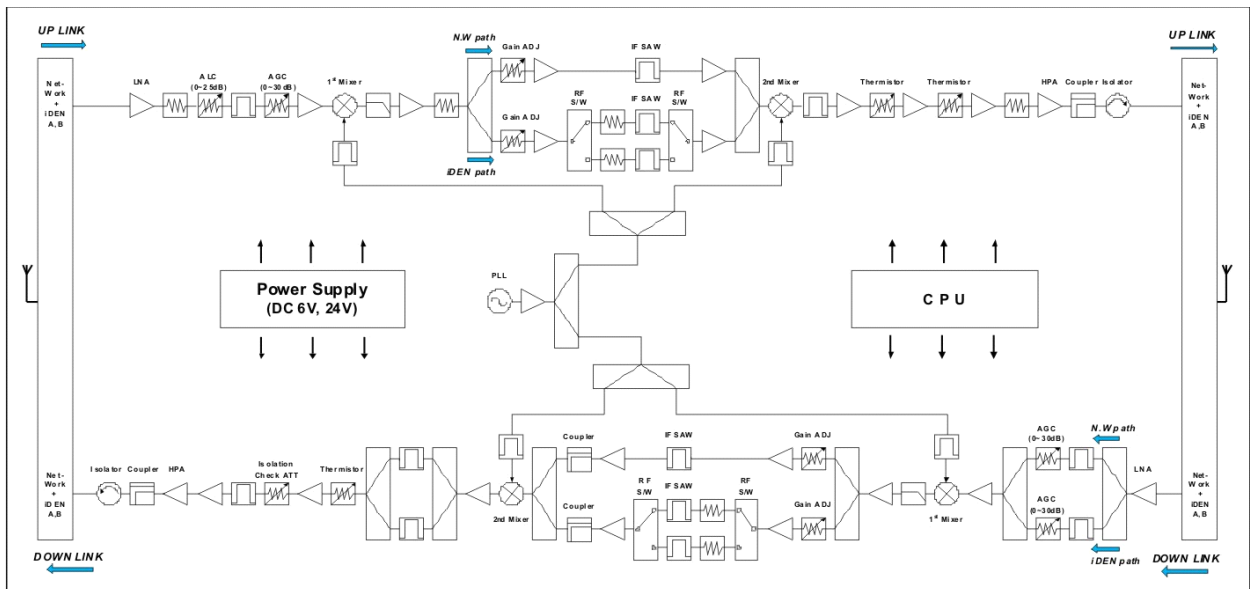
Product Features

- Easy Installation, Small, Light weight, Single Unit Type Housing
- Built-in AGC, ALC, and an Easy to use Auto Shut Down Function

Special Installation Directions

- SMR-700/800 Repeater has been designed to be used in a limited area.
- Electric shock may occur if repeater is installed in close proximity to water.
- Keep the unit clean and dust free during installation.
- Do not place cables or tools in close proximity to the repeater that may damage it.
- Do not wear jewelry, watches, or any type of metal accessories when installing the unit.
- Check the installation site for hazardous conditions, such as water covered floors, or badly worn or damaged cables, prior to installation.
- Lifespan and performance of the repeater may be reduced if the unit is operating outside of its temperature range.
- Opening or disassembling the repeater will render its warranty void.

Function Block diagram



The function of the SMR-700/800 is as indicated in the block diagram above.

- **Multiplexer Block:** combines several different frequencies into one or divides several different frequencies, combines and transfers the Network and iDEN A, or iDEN B, and transfers the DL and UL signal separately.
- **LNA/AGC Block:** Amplifies the low end signal coming from the antenna while minimizing noise.
- **Up/Down Converter Block:** Made up of a Mixer and an IF SAW Filter. It converts frequencies to different frequencies that utilize better filter performance.
- **HPA/DRV AMP Block:** A power amplifier for the repeater's high output, high gain and high linearity.
- **PLL Block:** Localizes signal for Up/Down converting.
- **CPU Block:** Controls all repeater functions
- **PSU Block:** Power supply receiving 110AC volts and converting it to +24VDC and +6VDC.

Product Specification

RF Specification

Item		Specification
FREQ. RANGE	UL	793-805MHz 806-816MHz Sub-Band1 817-824MHz Sub-Band2
	DL	763-775MHz 851-861MHz Sub-Band1 862-869 MHz Sub-Band2
Sub Band Tuning	UL / DL	50KHz Step Size (From edge of Pass Band)
Frequency Selectivity	UL / DL	@-40dBc \pm 2MHz
Gain	UL / DL	80dB(\pm 1.0dB)
Sub Band Balance	UL / DL	\pm 1.0dB
Gain Adjustment Range	UL / DL	30dB / 30dB(\pm 1dB, 1dB Step)
ALC Range	UL / DL	25dB / 25dB(\pm 1dB)
Pass Band Ripple	UL / DL	\pm 1.5dB(Peak-To-Peak 3dB)
Linear Output Power	UL / DL	+27dBm
3rd Order Intercept Point	UL / DL	+42.5dBm
1dB Gain Compression	UL / DL	31dBm
Input VSWR	UL / DL	<2:1
Max Power Input w/o Damage	UL / DL	+10dBm
Propagation Delay	UL / DL	3us
Noise Figure	UL / DL	<6.5dB @Max. Gain

Power Specification

Parameters	Specifications	Remarks
Main Power Input Voltage	110VAC @ 1.3A	Internal AD DC Power Supply

Mechanical Specification

Parameters	Specifications	Remarks
Size (mm)	200 x 270 x 86.5mm(L x H x D)	
Connectors	Link/Service Antenna Ports	N - Female
	AC Power In	AC Cord 1.5M
	Frame Ground	External grounding point to be provided
	RS232C (Internal)	9P D-SUB, female
	Alarm (External)	9P D-SUB, female
Mounting Type	Wall Mounting with 4 holes	2 holes on each side
Enclosure Lock	Key Lock	
Heat Dissipation	Natural Convection	

Environmental Specification

Parameter	Specifications	Remarks
Operating Temperature	-10° C ~ +50° C (ambient)	+14 - +122F
Storage Temperature	-30° C ~ +55° C (ambient)	-22 - +130F
Humidity	95%	

Alarm Interface

Repeater Unit LED			Condition / Troubleshooting
Power	ISO	Alarm	
X	X	X	Power Supply is malfunctioning (inside repeater)
Blinking GREEN	Blinking RED	Blinking RED	Checking Isolation Status
Solid GREEN	Off RED	Off RED	Normal Condition at Start up
Solid GREEN	Off RED	Off RED	Insufficient distance (Isolation) exists between the DL and UL Antennae. Remove power and re-install the DL and UL Antennae to correct isolation problem.
Solid GREEN	Off RED	Solid RED	This condition is the Shut-Down Alarm: signal received from cell tower is too strong (more than AGC range). Relocate DL antenna to reduce received signal strength.
Solid GREEN	Off RED	Blinking RED	PLL Lock Detected Failure Alarm.
Blinking GREEN	Off RED	Off RED	Repeater is non-functional. Contact Customer Service Center.

Alarm Relay

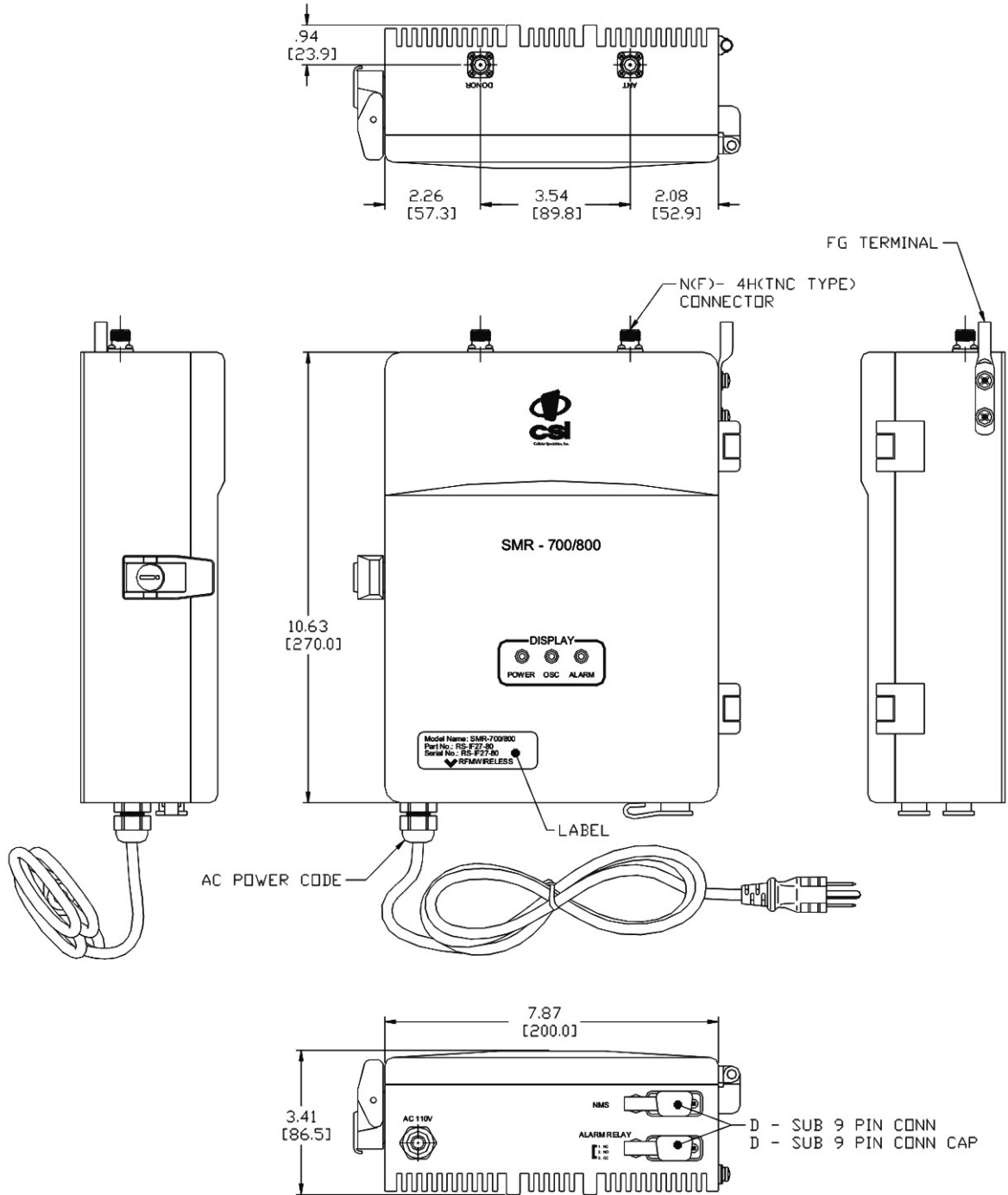
Shutdown Signal	Relay Status	Remarks
High	NO + CC	1 NC, 2 NO, 3 CC
Low	NC + CC	

Product Appearance

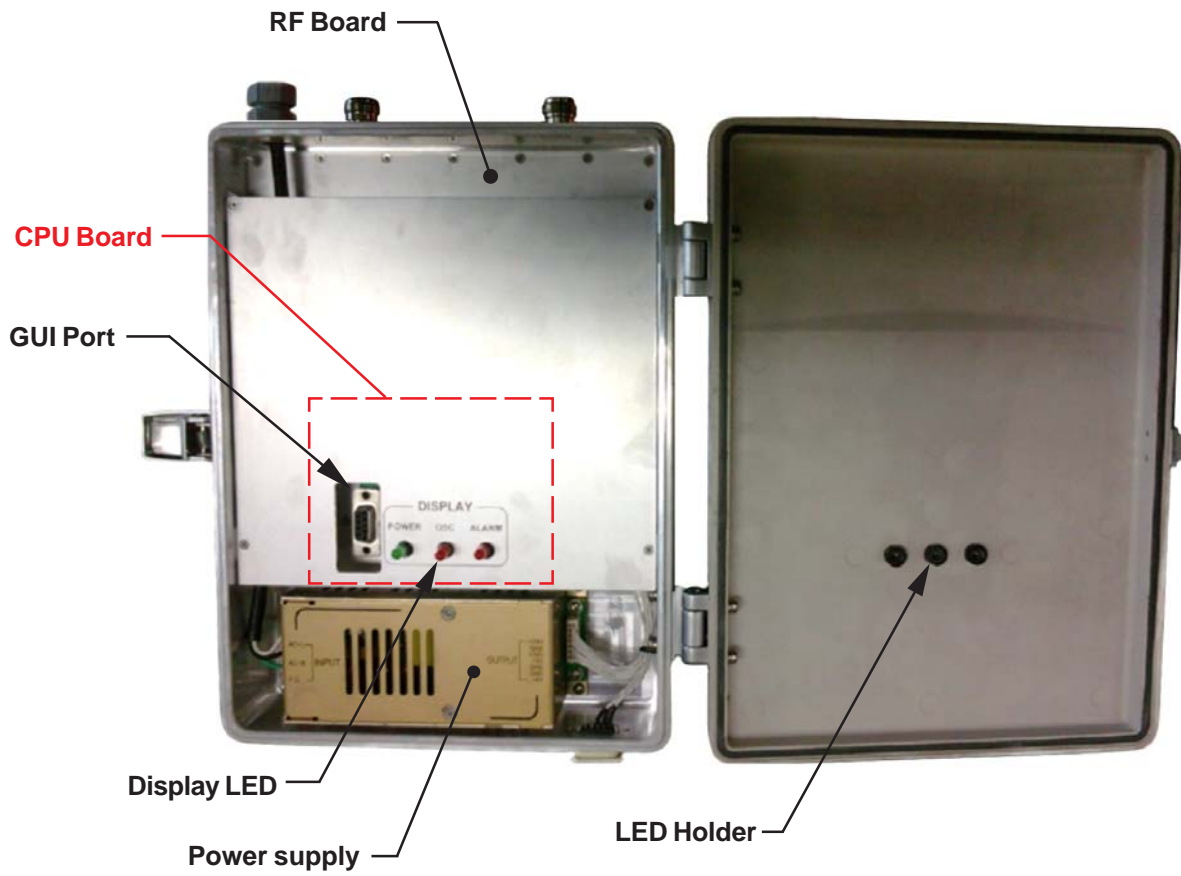
External Arrangement



Outline Drawing

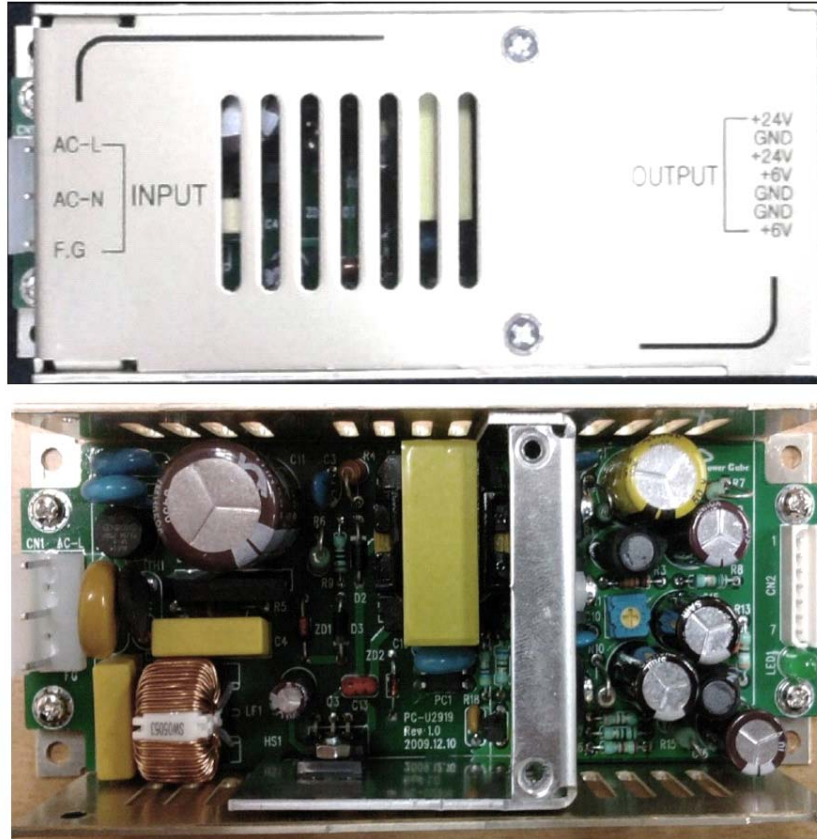


Internal Arrangement



Power Supply Unit (PSU)

The PSU converts the 110VAC line voltage to +24VDC and +6VDC



The unit's Power Supply

Power Supply Specification

Item	Specifications	Remarks
Line Regulation	Normal operation @ 90VAC ~ 140VAC < output Voltage + 3%	
Load Regulation	Normal operation @ 24V 2A, 6V 2A < output Voltage + 3%	
Short Current Protection	A decline in output voltage will be normalized	
Ripple and Noise	< 24V/100mVp-p < 6V/50mVp-p	
Efficiency	> 70%	

GUI (Graphic User Interface)

Program Introduction

This program checks and controls the operation of the control board for the SMR-700/800. This program will be communicated via the control board and RS-232C Port.

GUI Setup

Begin the installation of the program with the file "CSI SMR Setup.exe".

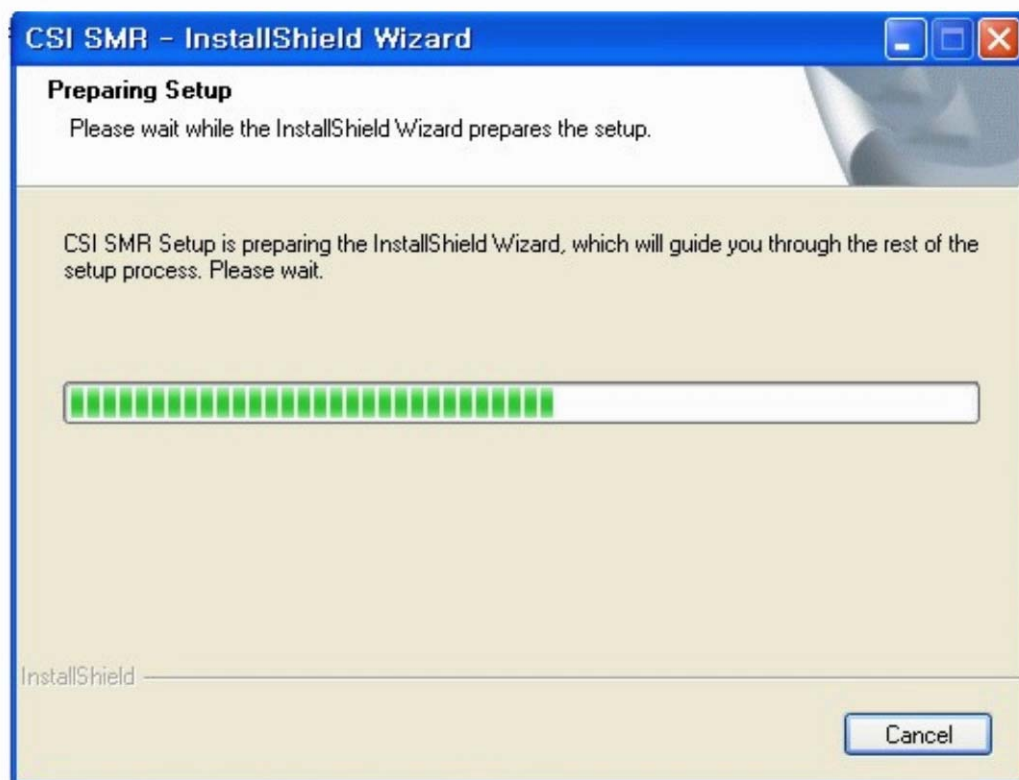


Figure 1: Application program installation

When the screen in **Figure 2** appears, Click **“Next”**

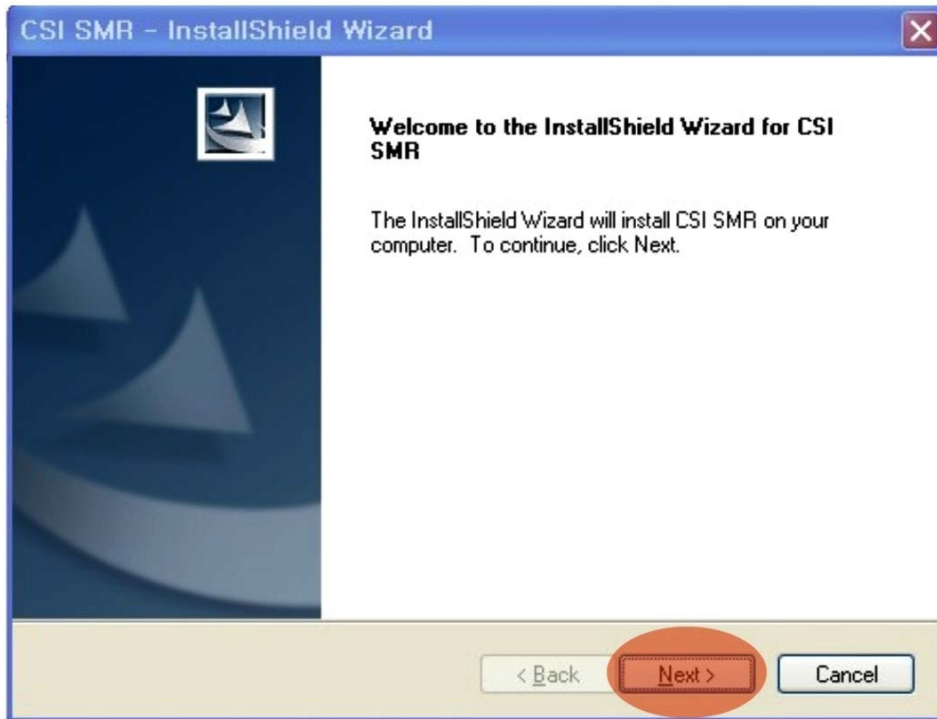


Figure 2: Program installation application

Decide which folder you wish to download into, then click **“Next”**.

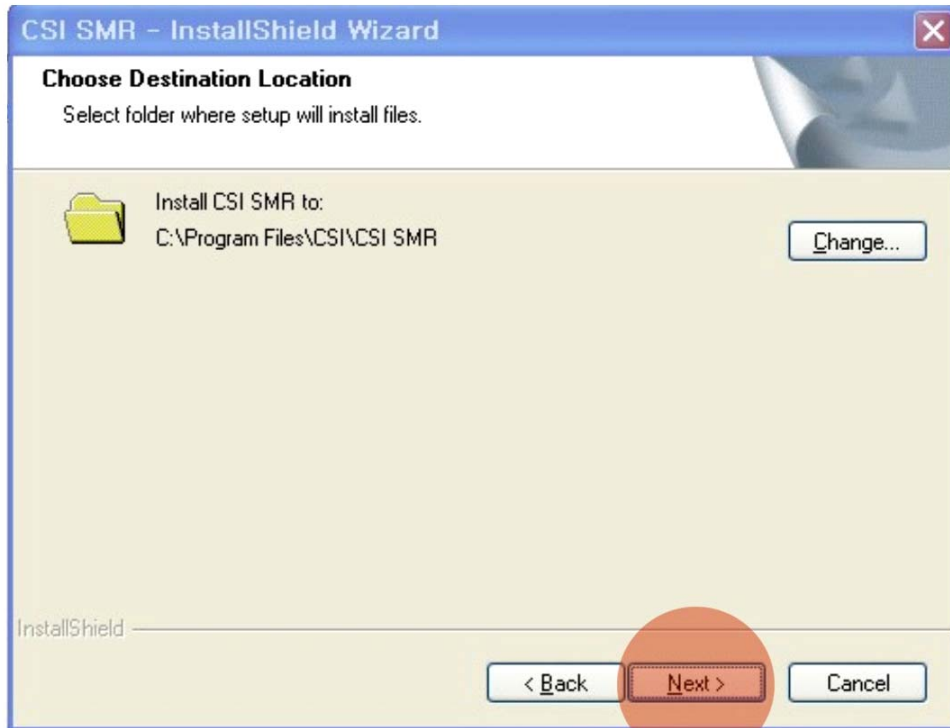


Figure 3: Program installation application

When ready to install program, click “Install”.

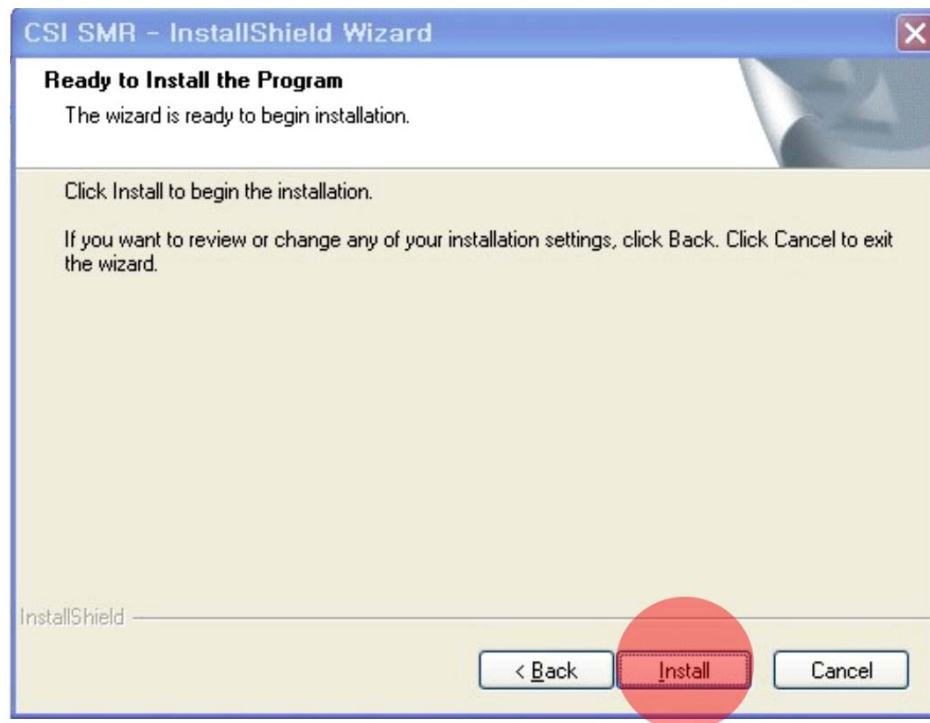


Figure 4: Program installation application

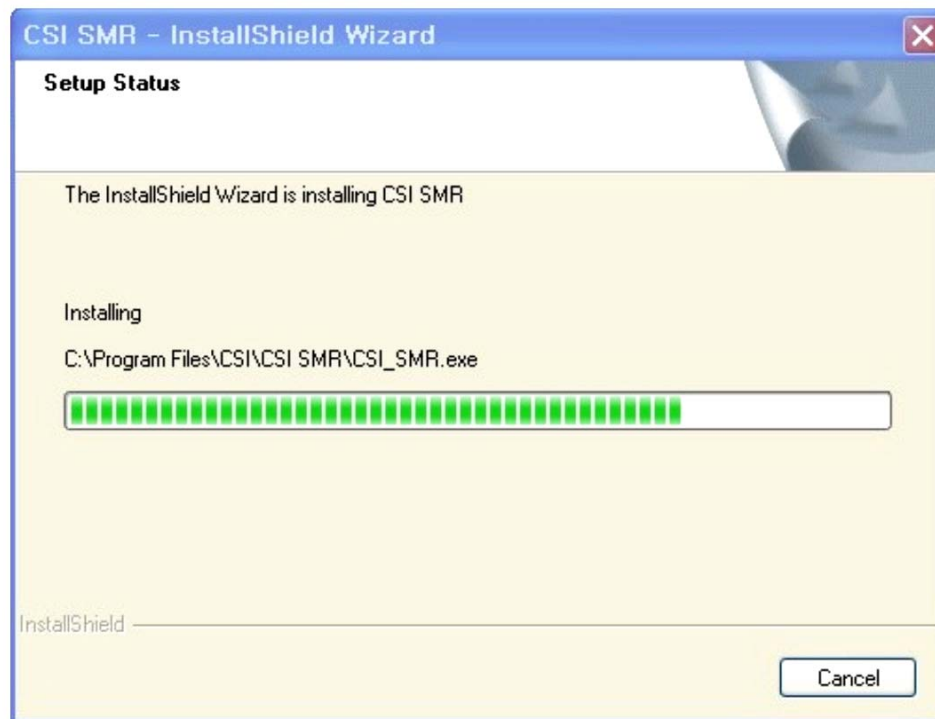


Figure 5: Ongoing program installation application

Click “Finish” when setup is complete

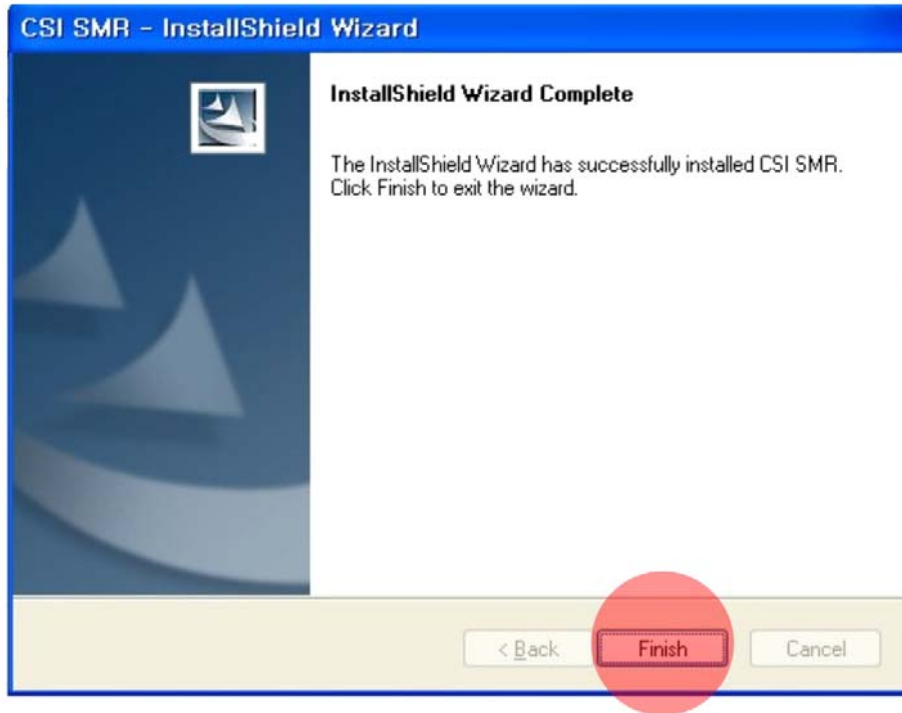
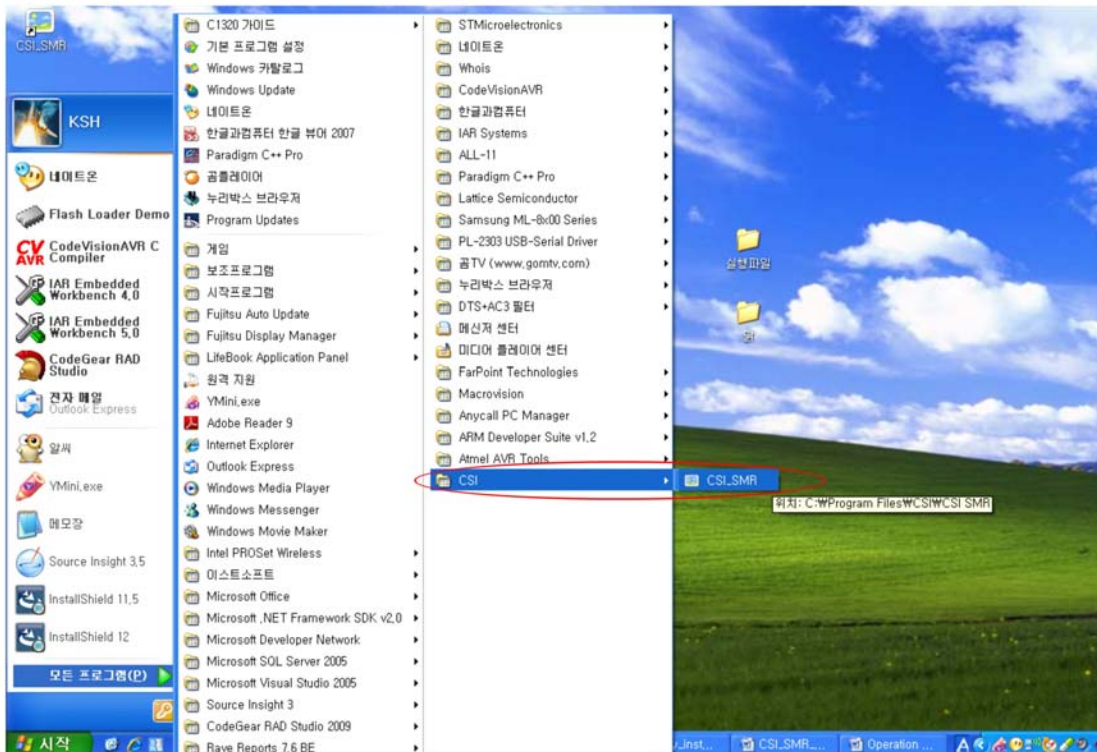


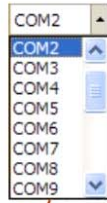
Figure 6: Program installation complete screen

Run Program(CSI_SMR.exe)

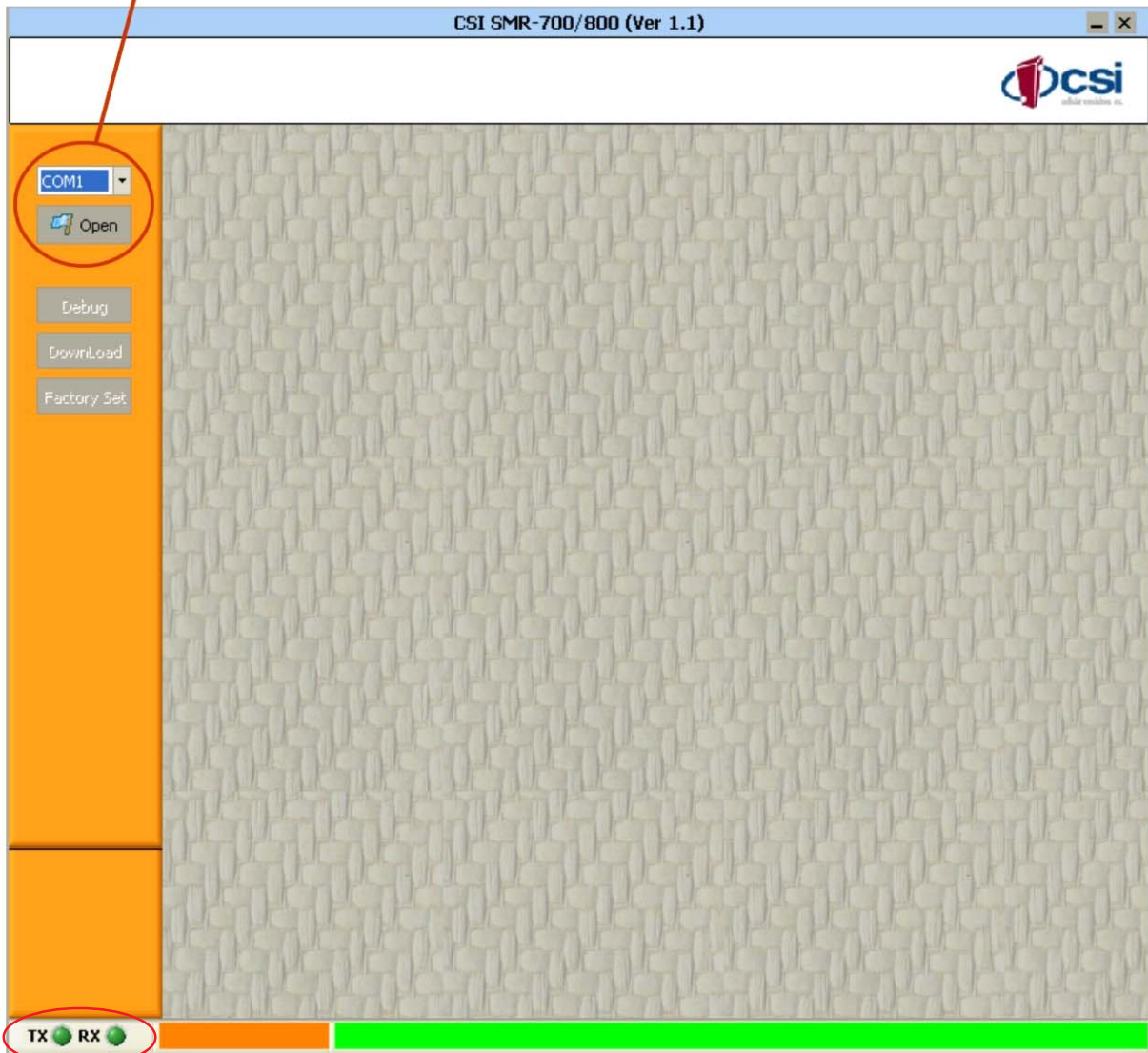


You should see the **CSI** Icon listed on your startup menu as seen above.

Open Serial Communication Port





Select communication port on your PC, then press “**OPEN**” to enable communication with repeater.



Indicates the status of communication with the repeater.


Checking status and control of the SMR-700/800 unit

This screen indicates repeater status and control. You may check each by clicking on the control buttons shown below

 <Status Mode>
 <Control Mode>

CSI SMR-700/800 (Ver 1.1)

Status
Control



COM4

Close

Debug

Download

Factory Set

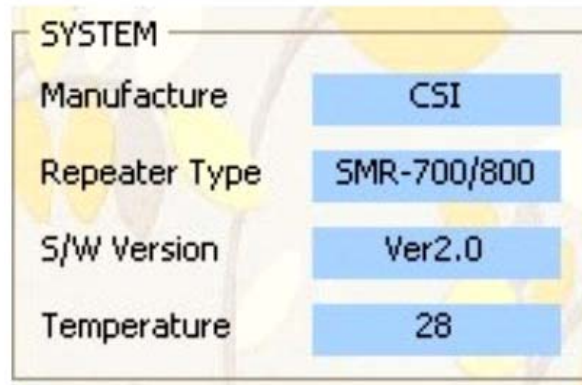
SYSTEM		ALARM		Frequency Information	
Manufacture	CSI	PLL LD	●	Start Frequency	End Frequency
Repeater Type	SMR-700/800	Isolation	●	Up Link	793.0 MHz 805.0 MHz
S/W Version	Ver2.0	ShutDown (DL/UL)	●	Down Link	763.0 MHz 775.0 MHz
Temperature	28	DC FAIL	●	Frequency Offset :	0 KHz
NORMAL		POWER		Band Select	
DL/UL Offset	On	NetWork Output[dBm]	N5	Start Frequency	End Frequency
Offset Level	0	IDEN Output[dBm]	N5	Up Link	806 MHz 816 MHz
		UL Output[dBm]	N5	Down Link	851 MHz 861 MHz
		NetWork RSSI[dBm]	N5	Band1 On/Off	On
		IDEN RSSI[dBm]	N5	Start Frequency	End Frequency
DOWN LINK		ISOLATION		Up Link	817 MHz 824 MHz
Gain[dB] (NetWork)	80	Isolation Value	Not Sufficient	Down Link	862 MHz 869 MHz
Atten[dB] (NetWork)	0	Isolation	On	Band2 On/Off	Off
Gain[dB] (IDEN)	80	Isolation ReCheck	Off	Start Frequency	End Frequency
Atten[dB] (IDEN)	0	Isolation Atten	15 dB	Up Link	817 MHz 824 MHz
ALC	On			Down Link	862 MHz 869 MHz
ALC Level[dBm]	15	UP LINK		ShutDown Period (DL/UL)	
ALC Offset	On	Gain[dB]	80	ShutDown Period	0 (M) 10 (S)
ALC Offset[dB]	-3	Atten[dB]	0		
ShutDown	On	ALCAtten[dB]	0		
ShutDown Level[dBm]	Over&Under	ALC	On		
HPA	On	ALC Level[dBm]	15		
		ShutDown	On		
		ShutDown Level[dBm]	Over&Under		
		HPA	On		

TX RX STATUS MODE Ack Status Communication

System Status Mode

- **Manufacture:** Indicates the repeater's manufacturer
- **Repeater Type:** Indicates the model of repeater
- **S/W Version:** Indicates the Firmware version of the control board
- **Temperature:** Indicates the inner temperature of repeater

Note: The **SYSTEM** pull-down menu is not part of the **Control** Menu.



The System Status screen

Normal Mode

- **DL/UL Offset:** Controls the power level of the Uplink based on the Downlink power level.(On/Off)
- **Offset Level:** Controls the Uplink power level based on the Downlink power level and displays the difference between the two.



Status Mode



Control Mode

Alarm Status Mode

- **PLL LD:** Display Alarm (GREEN = Normal; RED = Alarm)
- **Isolation:** Display Alarm (GREEN = Normal; RED = Alarm)
- **ShutDown(DL/UL):** Display Alarm (GREEN = Normal; RED = Alarm)
- **DC FAIL:** Display Alarm (GREEN = Normal; RED = Alarm)

Note: The **Alarm** pull-down menu is not part of the **Control** Menu.

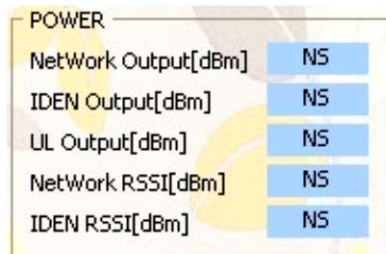


Alarm status Mode screen

Power Status Mode

- **NetWork Output(dBm):** Displays Downlink output (NetWork).
- **iDEN Output(dBm):** Displays Downlink output (iDEN).
- **UL Output(dBm):** Displays Uplink output
- **Network RSSI(dBm):** Displays the Downlink output (NetWork).
- **iDEN RSSI(dBm):** Displays the Downlink input (iDEN).

Note: The **POWER** pull-down menu is not part of the **Control** Menu.

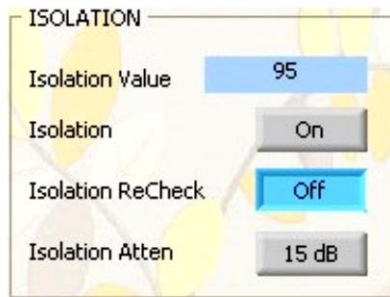


Power status Mode screen

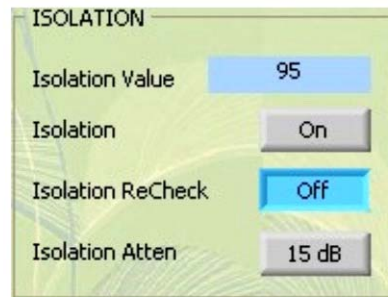
Isolation Status Mode

- **Isolation Value:** When power is on, an Isolation check is performed, and the values displayed.
- **Isolation:** The Isolation check can be performed with the power on or off.
- **Isolation Recheck:** Checks Isolation without the power on.
- **Isolation Attenuation:** This allows control of the Isolation attenuation.

Note: Neither the **Isolation Check** or **Recheck** will not indicate a change in power levels if the unit's own power has been switched off.



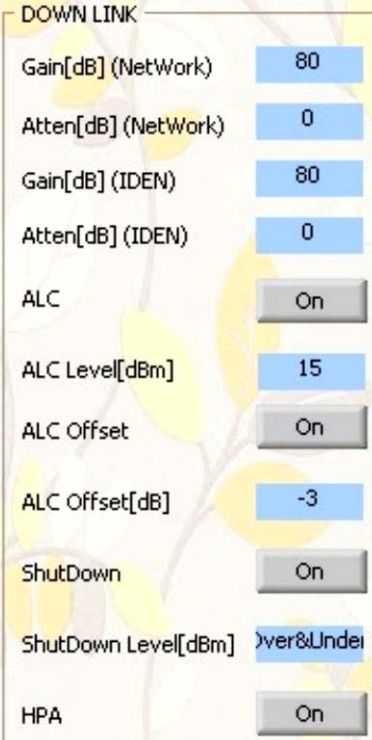
Isolation status Mode screen



Isolation Control Mode screen

Downlink


- **Gain[dB](NetWork):** Displays the NetWork Downlink Gain.
- **Atten[dB](NetWork):** Displays the NetWork Downlink Attenuation value.
- **Gain[dB](iDEN):** Displays the iDEN Downlink Gain.
- **Atten[dB](iDEN):** Displays the iDEN Downlink Attenuation value.
- **ALC:** This allows the user to toggle the Auto Level Control function on or off.
- **ALC Level[dBm]:** Sets the unit's maximum ALC output value.
- **ALC Offset:** This allows the user to toggle the Auto Level Control Offset on or off.
- **ALC Offset[dB]:** Sets the unit's minimum ALC output value.
- **Shutdown:** This allows the user to shutdown the unit if the downlink output is higher than the user determined shutdown value.
- **Shutdown Level:** This allows the user to input the maximum value at which the unit will shutdown.
- **HPA:** This allows the user to toggle the Downlink HPA on or off.



DOWN LINK

Gain[dB] (NetWork)	80
Atten[dB] (NetWork)	0
Gain[dB] (iDEN)	80
Atten[dB] (iDEN)	0
ALC	On
ALC Level[dBm]	15
ALC Offset	On
ALC Offset[dB]	-3
ShutDown	On
ShutDown Level[dBm]	Over&Under
HPA	On

Downlink Status Mode



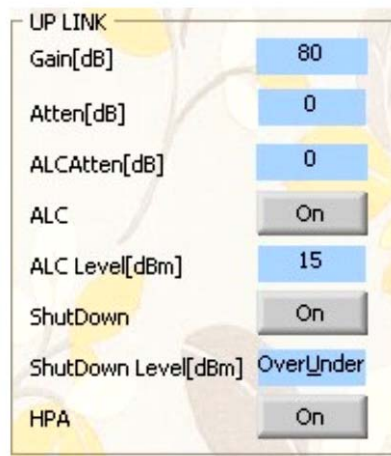
DOWN LINK

Gain[dB] (NetWork)	80
Atten[dB] (NetWork)	0
Gain[dB] (iDEN)	80
Atten[dB] (iDEN)	0
ALC	On
ALC Level[dBm]	15
ALC Offset	On
ALC Offset[dB]	-3
ShutDown	On
ShutDown Level[dBm]	30
HPA	On

Downlink Control Mode

Uplink

- **Gain[dB]:** Displays the status of the Uplink Gain.
- **Atten[dB]:** Displays the Uplink Attenuation value.
- **ALC Atten[dB]:** Displays the attenuation value of a strong signal in the initial stage when unit is powered (Control unavailable).
- **ALC:** This allows the user to toggle the Auto Level Control function on or off.
- **ALC Level[dBm]:** Sets the unit's maximum ALC output value.
- **Shutdown:** This allows the user to toggle the HPA shutdown of the unit if the Downlink output is higher than the user determined shutdown value.
- **Shutdown Level:** This allows the user to input the maximum value at which the unit will shutdown.
- **HPA:** This allows the user to toggle the Uplink HPA on or off.



Uplink Status Mode



Uplink Control Mode

Frequency Information

Frequency offset: 931.300 MHz + 1 MHz (50 KHz Steps).

Frequency Information		
	Start Frequency	End Frequency
Up Link	793.0 MHz	805.0 MHz
Down Link	763.0 MHz	775.0 MHz
Frequency Offset : 0 KHz		

Frequency Status Mode

Frequency Information		
	Start Frequency	End Frequency
Up Link	793.0 MHz	805.0 MHz
Down Link	763.0 MHz	775.0 MHz
Frequency Offset : 0 <input type="text" value="0"/>		

Frequency Control Mode

Band Select

- **Band 1 On/Off:** Activates Band 1 Frequency (Band 2 is deactivated).
- **Band 2 On/Off:** Activates Band 2 Frequency (Band 1 is deactivated).

Band Select		
	Start Frequency	End Frequency
Up Link	806 MHz	816 MHz
Down Link	851 MHz	861 MHz
Band1 On/Off <input checked="" type="checkbox"/>		
	Start Frequency	End Frequency
Up Link	817 MHz	824 MHz
Down Link	862 MHz	869 MHz
Band2 On/Off <input type="checkbox"/>		

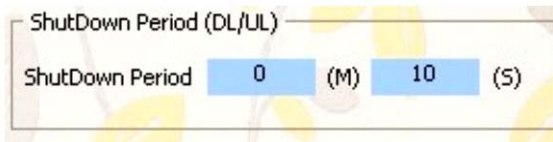
Band Select Status Mode

Band Select		
	Start Frequency	End Frequency
Up Link	806 MHz	816 MHz
Down Link	851 MHz	861 MHz
Band1 On/Off <input checked="" type="checkbox"/>		
	Start Frequency	End Frequency
Up Link	817 MHz	824 MHz
Down Link	862 MHz	869 MHz
Band2 On/Off <input type="checkbox"/>		

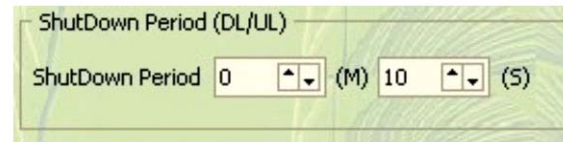
Band Select Control Mode

Shutdown Period

Shutdown Period (M),(S): Allows the user to set the shutdown period duration.



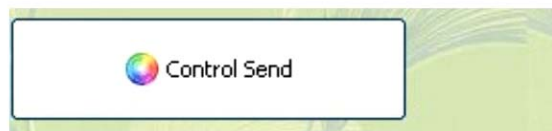
Shutdown Status Mode



Shutdown Control Mode

Control Send

Control Send: When the unit is fully configured, the settings can then be sent to the repeater by clicking on the "**CONTROL SEND**" button.



Management Mode

Press **Ctrl + F10** while in Mode Status/Control Mode to go into **Management Mode**

The screenshot displays the Management Mode interface for the CSI SMR-700/800 (Ver 1.1). The interface is organized into several functional areas:

- ADC Section:** Includes DL Out, UL Out, Volt In, NetWork In, and IDEN In, each with a "--" indicator and a "Load" button.
- COMPENSATION Section:** Includes Temp Offset (0) with a "Load" button.
- NORMAL Section:** Includes DL/UL Offset (Off) and Offset Level (0), both with "Load" buttons.
- Isolation Re-Check Section:** Includes Isolation (Off) with a "Load" button.
- ATTN Section:** Includes DL Atten, NetWork Atten (0), IDEN Atten (0), UL Atten, UL UserAtten (0), and UL ALC Atten (0), each with a "--" indicator and a "Load" button.
- POWER & TEMP & Atten TABLE:** A table with 18 rows and 6 columns: dBm, DL OUT, dBm, UL OUT, dBm, and Net. The table is currently displaying values for 18 rows, with the first row (1) highlighted in blue.
- OFFSET Section:** Includes DL Out (0) and UL Out (0), each with an "Apply" button.

The bottom status bar shows "TX" and "RX" indicators, and the mode is set to "MANAGE MODE".

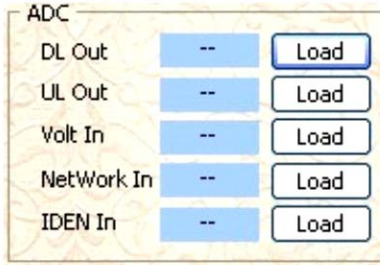
	dBm	DL OUT	dBm	UL OUT	dBm	Net
1	-5	0	-5	0	-75	0
2	-4	0	-4	0	-74	0
3	-3	0	-3	0	-73	0
4	-2	0	-2	0	-72	0
5	-1	0	-1	0	-71	0
6	0	0	0	0	-70	0
7	1	0	1	0	-69	0
8	2	0	2	0	-68	0
9	3	0	3	0	-67	0
10	4	0	4	0	-66	0
11	5	0	5	0	-65	0
12	6	0	6	0	-64	0
13	7	0	7	0	-63	0
14	8	0	8	0	-62	0
15	9	0	9	0	-61	0
16	10	0	10	0	-60	0
17	11	0	11	0	-59	0
18	12	0	12	0	-58	0

Management Mode Screen

ADC

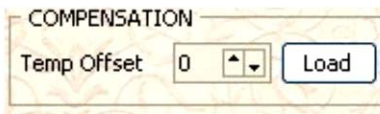
Click the appropriate “**LOAD**” button to display the following:

- **DL Out:** This displays the updated A/D value of DL Out.
- **UL Out:** This displays the updated A/D value of UL Out under load.
- **Volt In:** This displays the updated A/D value of the Input Voltage.
- **Network In:** This displays the updated A/D value of UL Out under load.
- **iDEN In:** This displays the updated A/D value of UL Out.



Compensation

- **Temp Offset:** Allows the user to input a value for the repeater temperature offset.
- **Load:** This displays the temperature offset value.



Normal

- **DL /UL Offset:** This displays the value of DL /UL Offset.
- **Load:** This allows the user to toggle the DL/UL Offset display on or off.
- **Offset Level:** This displays and allows the user to set the value of the offset level.
- **Load:** This applies the selected offset level to the repeater.



Isolation Re-Check

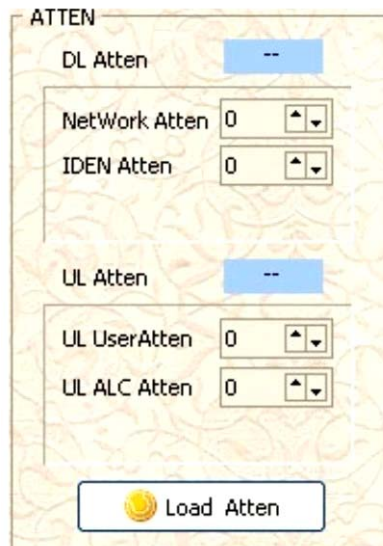
- **Isolation:** This displays the status of the **Isolation Re-Check** function.
- **Load:** This allows the user to toggle the **Isolation Re-Check** function display on or off.



Attenuation

The **DL Atten** is controlled thru the **NetWork Atten** and **iDEN Atten** settings; **UL Atten** is controlled thru the **User Atten** and **ALC Atten** settings.

- **DL Atten:** This displays the attenuation value of the Downlink(NetWork)
- **NetWork Atten:** This controls & displays the attenuation value of the Downlink(NetWork).
- **iDEN Atten:** This controls & displays the attenuation value of the Downlink(iDEN).
- **UL Atten:** This displays the attenuation value of the Uplink.
- **User Atten:** This controls & displays the attenuation value of the Uplink.
- **ALC Atten:** This controls & displays the attenuation value of the Uplink ALC.
- **Load Atten:** This configures the attenuation values in the repeater and updates the values displayed in the **DL Atten** & **UL Atten** windows.



Power & Temp & Atten Table

The **POWER & TEMP & Atten** table displays the applied decibel value for **NetWork RSSI**, **iDEN RSSI**, & **UL Output**. It does not display A/D values.

Apply **DL Out** value for **ISOLATION CHECK** operation.

- **Load Table:** This downloads & displays the applied values from the repeater.
- **Store Table:** This configures the repeater to user applied values.
- **Write:** This saves the most current version of the table to a .txt format
- **Read:** This displays the .txt copy of the table on the screen.

POWER & TEMP & Atten TABLE

	dBm	DL OUT	dBm	UL OUT	dBm	Net
1	-5	0	-5	0	-75	0
2	-4	0	-4	0	-74	0
3	-3	0	-3	0	-73	0
4	-2	0	-2	0	-72	0
5	-1	0	-1	0	-71	0
6	0	0	0	0	-70	0
7	1	0	1	0	-69	0
8	2	0	2	0	-68	0
9	3	0	3	0	-67	0
10	4	0	4	0	-66	0
11	5	0	5	0	-65	0
12	6	0	6	0	-64	0
13	7	0	7	0	-63	0
14	8	0	8	0	-62	0
15	9	0	9	0	-61	0
16	10	0	10	0	-60	0
17	11	0	11	0	-59	0
18	12	0	12	0	-58	0

Power / T1

Load Table Store Table Write Read

Temp Table and Attenuation Table is not used.

Offset

Configure the unit's Offset values using the **Offset** table.

OFFSET

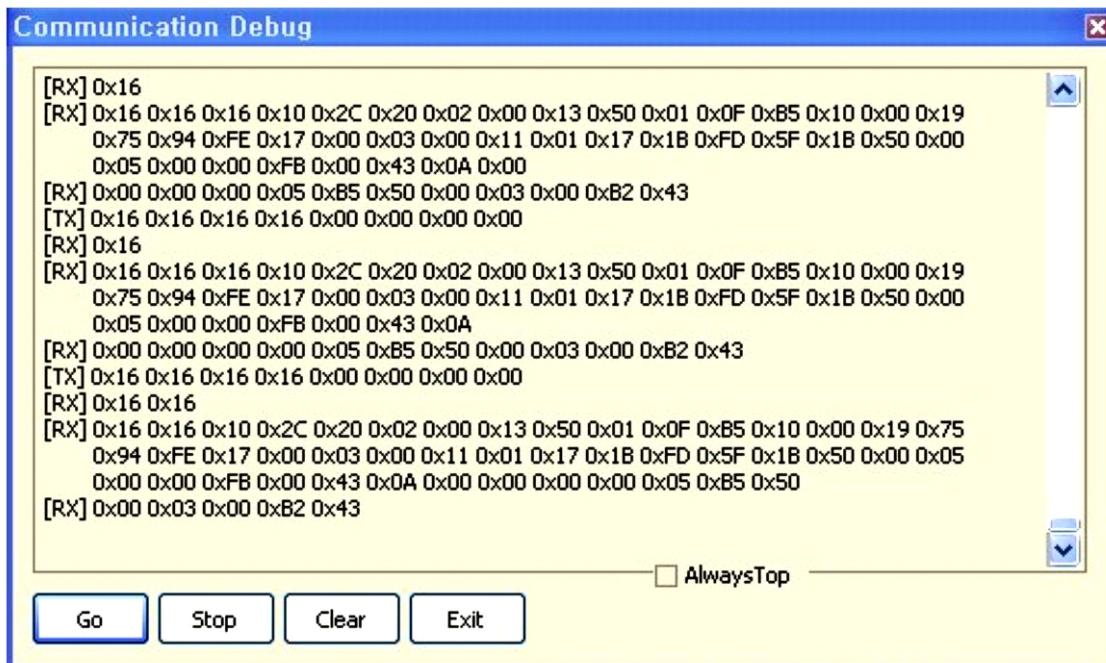
DL Out	0	▲▼	Apply
UL Out	0	▲▼	Apply

Debugging

To begin the debugging process, click the “**Debug**” button in management mode.



This allows the user to check the data transferring between the repeater and the PC.



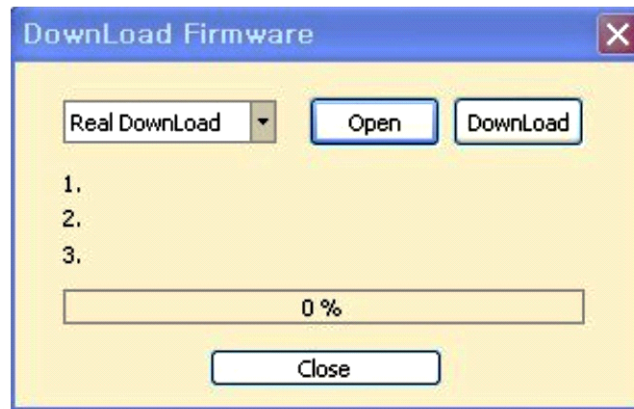
- **Go:** This displays the communications contents that have been suspended.
- **Stop:** This command stops the contents of the communications from scrolling.
- **Clear:** This deletes all communication contents being displayed.
- **Exit:** This command closes the debug window.
- **Always Top:** This sets the debug window to always display at the top of the window.

Downloading

To update the firmware, begin by clicking the “**Download**” button in management mode.



Next, perform the following steps:



- **Click Open:** Open the firmware binary file. The Binary File Open dialog box will open.
- **Download:** Firmware download status will be displayed. The Download Complete message will open when the procedure is complete or an error message will be displayed. Write the firmware file to the repeater.
- **Close:** This command closes the download window.

Factory Settings

Click on the “Factory Set” button in Management Mode.

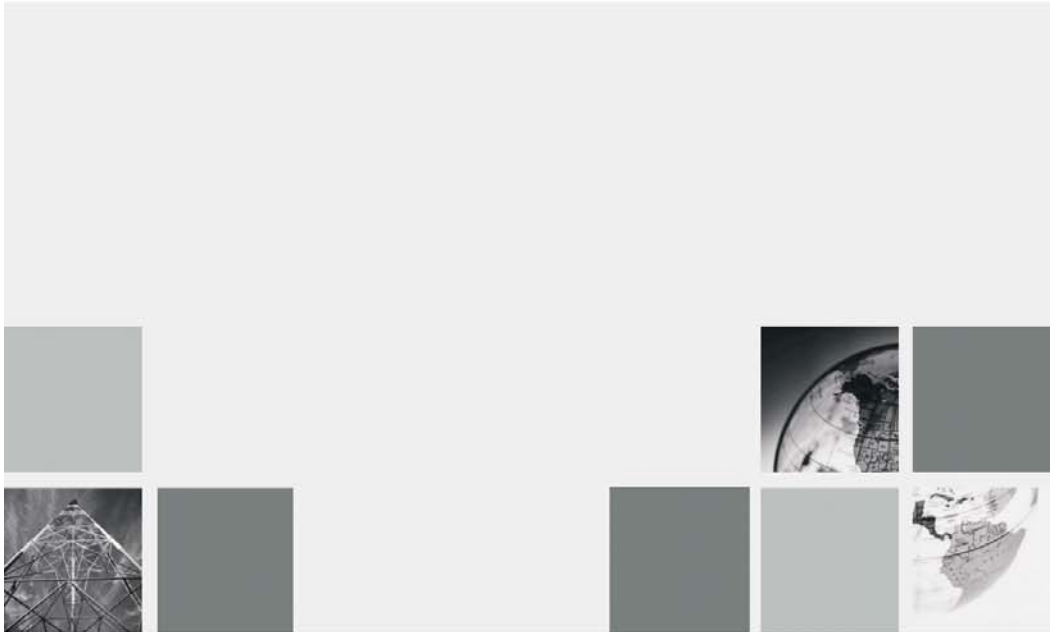


- This feature is currently not used.
- Feature will be included in the next production run.

One Year Limited Warranty

Seller warrants that its products are transferred rightfully and with good title; that its products are free from any lawful security interest or other lien or encumbrance unknown to Buyer; and that for a period of one year from the date of installation or fifteen months from the date of original shipment, whichever period expires first, such products will be free from defects in material and workmanship which arise under proper and normal use and service. Buyer's exclusive remedy hereunder is limited to Seller's correction (either at its plant or at such other place as may be agreed upon between Seller and Buyer) of such defects by repair or replacement at no cost to Buyer. Transportation costs in connection with the return of products to Seller's plant or designated facility shall be paid by Buyer. The provisions of this warranty shall be applicable with respect to any product which Seller replaces pursuant to it. SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN AS SPECIFICALLY STATED ABOVE. EXPRESSLY EXCLUDED ARE THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE. THE FOREGOING SHALL CONSTITUTE ALL OF SELLER'S LIABILITY (EXCEPT AS TO PATENT INFRINGEMENT) WITH RESPECT TO THE PRODUCTS. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INSTALLATION COSTS, LOST REVENUE OR PROFITS, OR ANY OTHER COSTS OF ANY NATURE AS A RESULT OF THE USE OF PRODUCTS MANUFACTURED BY THE SELLER, WHETHER USED IN ACCORDANCE WITH INSTRUCTIONS OR NOT. UNDER NO CIRCUMSTANCES SHALL SELLER'S LIABILITY TO BUYER EXCEED THE ACTUAL SALES PRICE OF THE PRODUCTS PROVIDED HEREUNDER. No representative is authorized to assume for Seller any other liability in connection with the products.

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670 North Commercial Street
Manchester, NH 03101

Toll Free: 1.877.844.4274
Phone: 603.626.6677
Fax: 603.626.6042

www.cellularspecialties.com