CELLPHONE-MATE®

SureCall® RAISE YOUR BARS

ENTERPRISE RECEPTION SOLUTION

CM2020 Dual Band Amplifier	
Uplink Freq. Range (MHz)	824-849/1850-1910
Down Freq. Range (MHz)	869-894/1930-1990
Supported Standards	CDMA, WCDMA,GSM,RDGE,TDMA AMPS.etc
Gain Adjustment Range	31dB
Signal Gain (depends on model)	68/ 75/ 80dB
Input/Output Impedance	50Ω
Noise Figure	5dB
VSWR	≤2.0
AC Power Transformer	110VAC, 60Hz IN / 5-20VDC OUT
Cable	CM400 or LMR400
Power Consumption	<20W
Dimensions	7.50" x 9.00" x 2"
Weight	6.5 lb

This manual applies to all CM2020 models.

Cellphone-Mate, Inc.

CM2020 (05/12) v1.1

Technical Support:
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www.surecall.com

Enterprise Cellular Amplifier

CM2020 User Manual

PARTS NO: CM2020-68/CM2020-75/CM2020-80

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Copyright & Trademark Information

THIS MANUAL CONTAINS SAFETY, INSTALLATION, CONFIGURATION AND WARRANTY INFORMATION FOR YOUR CELLPHONE-MATE, INC (CMI) AMPLIFIER. CMI RECOMMENDS THAT YOU SAVE THIS MANUAL IN A READILY ACCESSIBLE LOCATION IN CASE ANY QUESTIONS ARISE ABOUT THIS PRODUCT.

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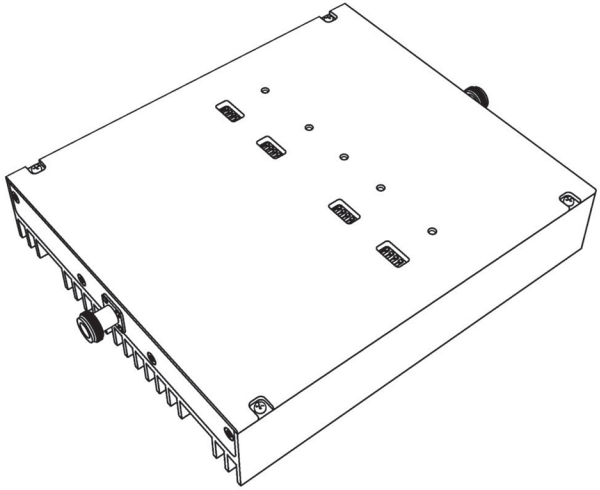
CHAPTER 1: Introduction

This chapter introduces the CM2020 Amplifier and this manual. Read this entire manual before proceeding with the installation. This manual applies to all CM2020 models.



1.1 - Package Contents

Your amplifier box contains the following items:

- CM2020 amplifier.
- Mounting kit (not shown).
- DC power supply (not shown).
- Wall anchors (not shown).

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1.2 - Features & Benefits

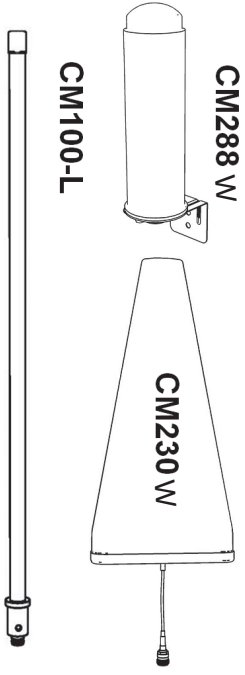
The CM2020 amplifier offers the following features and benefits:

- Powerful in-building amplifier with 31dB of adjustable gain level.
- Extends cellular signals in areas with poor coverage due to geographical location and/or building design.
- Suitable for large areas up to approx 60,000 square feet depending on outside signal strength and carrier frequency.
- Sophisticated power control maintains maximum output power at 3 watts EIRP.
- Automatic oscillation detection and protection system powers down the amplifier to prevent harmful radio interference (if equipped).

1.3 - Additional Items Needed

The CM2020 amplifier requires the following additional components for a complete installation:

- External antenna (such as the CM100-L or CM288W omni or CM230W Yagi by Cellphone-Mate, Inc.)
- Lightning protector (CMLP).
- Cable splitter if installing multiple antennas (up to six in a typical installation).



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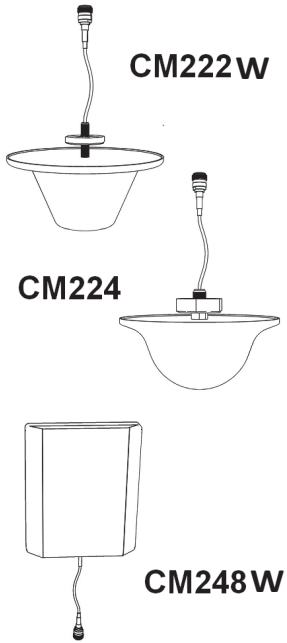
- Sufficient CM400 ultra low loss interior/exterior cable (for amplifiers above 55dB).
- Sufficient CM240 ultra low loss interior/exterior cable (for amplifiers 55dB and below).
- Up to 6 internal antennas (such as the CM222W, CM223, or CM224 omnidirectional domes and/or CM248W flat panel by Cellphone-Mate, Inc.).
- Grounded surge suppressor for DC power supply.



1.4 - How It Works

The CM2020 amplifier boosts cellular signals from the nearest tower to phones in a building and from those phones back to the tower to compensate for weak reception caused by distance, topography, building structure, and/or other reasons. The amplifier receives the signal from an outside antenna, amplifies that signal, and then rebroadcasts it via the interior antenna(s) where it is picked up by cellular phones, modems, and data cards. The interior antennas also pick up signals from cellular devices and pass them to the amplifier. The amplifier boosts these signals and passes them to the exterior antenna for rebroadcast back to the tower.

1.5 - About This Manual

This manual contains the following information:

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- **Introduction:** This chapter introduces the CM2020 amplifier and this manual.
- **Safety:** This chapter contains important safety information.
- **Planning:** This chapter describes how to plan your installation for best results.
- **Installation:** This chapter describes how to install the amplification system.
- **Warranty:** This chapter contains warranty information for your amplification system.
- **Regulatory Information:** This chapter contains important regulatory agency information.

Lists of items or points to consider that need not be performed in order appear in bullet format:

- Item 1
- Item 2

Procedures that must be followed in a specific order appear in numbered steps:

1. Perform this step first.
2. Perform this step second.

This manual also contains important safety information and instructions in specially formatted callouts with accompanying graphic symbols:

WARNING: WARNINGS INDICATE THE POSSIBILITY OF PERSONAL INJURY.

CAUTION: WARNINGS INDICATE THE POSSIBILITY OF EQUIPMENT DAMAGE RADIO INTERFERENCE, ETC.

Note: Notes provide helpful information.

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CHAPTER 2: Safety

This chapter contains important safety information designed to prevent personal injury, equipment malfunction, and/or radio interference. You are responsible for ensuring a safe installation.

2.1 - Safety Warnings

- You are responsible for knowing and following all applicable codes and regulations and for obtaining all required permits and inspections.
- Follow all safety precautions contained in this Installation Manual.
- The installation process may require working in high locations such as roofs and/or ladders. Follow applicable safety regulations and best practices to avoid falling. Take care not to drop objects off any high area. Cordon off ground areas directly below roof or ladder work when possible.

WARNING: FAILURE TO EXERCISE CAUTION WHEN WORKING IN HIGH AREAS COULD CAUSE A FALL AND PERSONAL INJURY.

- Always use appropriate personal protective equipment such as goggles, gloves, hard hat, etc. as needed and as required.

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- Some components may be heavy and/or bulky. Always use proper lifting and carrying techniques when handling components, especially when working on a ladder, roof, or other area with a fall hazard.
- The exterior antenna must not be co-located or operating in conjunction with any other antenna.
- Always use a properly installed Cellphone-Mate lightning protector between the exterior antenna and the amplifier.

CAUTION: FAILURE TO PROPERLY INSTALL A LIGHTNING PROTECTOR CAN RESULT IN DAMAGE TO THE AMPLIFIER, ANTENNAS, AND WIRING.

- Always power off the amplifier before working on the roof of the building or anywhere in close proximity to the external antenna.
- Allow at least 24 inches (60cm) of separation between interior antennas and humans or animals.
- Allow at least 24 inches (60cm) of separation between exterior antennas and all persons.
- Comply with all antenna separation requirements to prevent signal oscillation.

CAUTION: SIGNAL OSCILLATION CAN CAUSE RADIO INTERFERENCE WITH CELLULAR TOWERS AND RESULT IN CIVIL AND/OR CRIMINAL PENALTIES.

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CHAPTER 3: Planning

This chapter describes how to plan your amplifier installation, including how to determine the best locations for the inside and outside antennas.

3.1 - Overview

The general amplifier installation process follows these steps:

1. Decide where to mount the exterior antenna. This will generally be on the wall or roof of the building in the location with the strongest signal. You will need to decide whether to use an omnidirectional antenna mounted vertically or a directional Yagi antenna pointed directly at the cellular tower (line of sight). You must also consider attaching a grounded lightning protector between the exterior antenna and the amplifier.
2. Decide where to mount the interior antenna(s), being sure to take separation requirements into account. In general, long narrow spaces will benefit most from directional flat-panel antennas while more square spaces will benefit more from omnidirectional dome antennas.
3. Decide where to mount the amplifier. This should be in a secure indoor location near a grounded power source.

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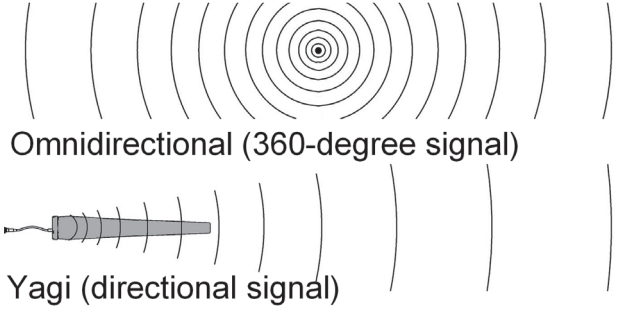
4. Decide where to route the cables between the exterior antenna and the amplifier and between the amplifier and interior antennas.
5. Install the antennas as described in their respective Installation Manuals.
6. Route the cables to the amplifier location.
7. Install the amplifier as described in this manual.
8. Power on the amplifier and perform the configuration and testing as described in this manual.

3.2 - Exterior Antenna

You may use either an omnidirectional antenna such as the CM100-L (flat area with no obstructions) or a directional Yagi antenna such as the CM230W (to point directly at the tower). The omnidirectional antenna receives and transmits signals over a horizontal 360-degree circle while the Yagi antenna receives and transmits signals over a focused area and must be aimed directly (line of sight) toward the cellular tower that provides the best signal to the building.



The exterior antenna and mast (if any) must be mounted in a location that meets all of the following criteria:

- Best signal strength.

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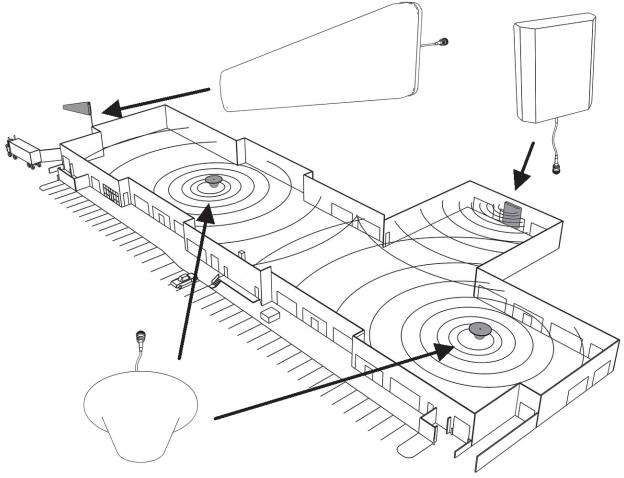
- Not collocated with other antennas or used in conjunction with other antennas.
- Away from all power lines.
- 6’ from lightning rod antennas.
- 24” from all persons.

These distances are general guidelines only; refer to the applicable building and electrical codes in your area to determine local requirements.

3.3 - Interior Antennas

You may use any combination of omnidirectional (dome) and/or directional (flat panel) interior antennas needed to obtain optimal signal strength throughout the building or installation area.Dome antennas such as the CM222W, CM223, and CM224 provide 360-degree hemispherical coverage suitable for mostly square areas while flat panel antennas such as the CM248W provide a focused zone of coverage suitable for long narrow areas. The following example uses two dome antennas and one panel antenna to provide full coverage (exterior Yagi antenna also shown):



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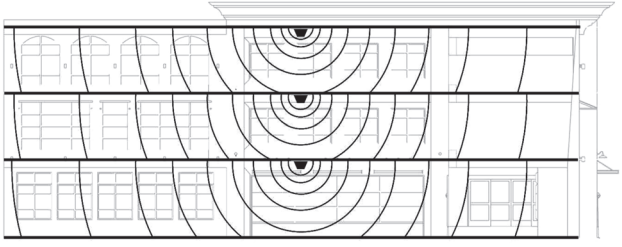
Keep in mind that floor structures in multistory buildings can cause significant signal loss, which means that you may need to install interior antennas on more than one floor. Here is an example of a multistory installation:



Note: You may or may not need antennas on every floor of a multistory building depending on factors such as building material, amplifier gain, etc.

3.4 - Antenna Separation

Proper antenna separation is essential in order to prevent signal oscillation (feedback) that can interfere with the cellular tower. Separation is measured in a straight line from the exterior antenna to the closest interior antenna. The closest allowable distance depends on a number of factors such as amplifier gain level, building material, etc. Recommended separation distances are:

Amplifier gain	Min. separation (*ad*)
40dB	5-6’
45dB	15-20’
50dB	50’
55dB	60’
65dB	75-80’
70dB	100’
75dB	100’-120’
80dB	120’-180’

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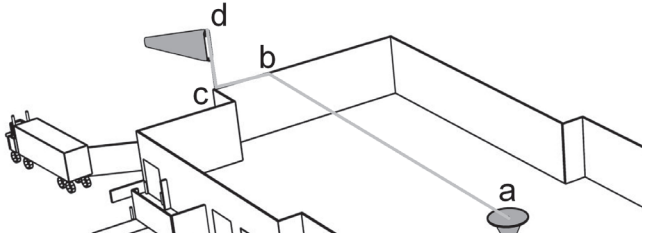
Note: Vertical separation is more important than horizontal separation. If you are unable to obtain the required separation horizontally, try raising the exterior antenna. You may also try reducing the amplifier gain as described in Chapter 5 of this manual.

The easiest way to calculate the straight-line separation between antennas is to break it down into three simple measurements and then use some basic geometry to find the distance, as follows:

1. Measure the distances *ab*, *bc*, and *cd* as shown in the diagram on the next page.
   - Distance from the nearest interior antenna (Point *a*) to the wall underneath the exterior antenna (Point *b*). This is distance *ab*.
   - Distance from Point *b* to directly underneath the exterior antenna. This is Point (*c*). This is distance *bc*.
   - Distance from Point *c* to the exterior antenna (Point *d*). This is distance *cd*.



2. Multiply *ab* times *ab* to obtain ab^2.
3. Multiply *bc* times *bc* to obtain bc^2.
4. Multiply *cd* times *cd* to obtain cd^2.
5. Add ab^2+bc^2 to obtain ac^2.
6. Add ac^2+cd^2 to obtain ad^2.

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7. The straight-line distance *ad* is the square root (√) of the result obtained in Step 6.

Note: Most calculators have a square root (√) key.

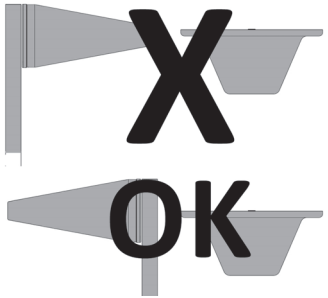
Example:

- Distance *ab*=40 feet; ab^2 = 40x40=1600.
- Distance *bc*=10 feet; bc^2 = 10x10=100.
- Distance *cd*=20 feet; cd^2 = 20x20=400.
- ac^2 = 1600+100=1700
- ad^2 = 1700+400=2100
- *ad* = 45.83’

Here, the straight-line distance *ad* is just under 46 feet, which is compatible with 50dB amplifier gain as indicated in the previous table.

Separate interior antennas based on the calculations shown in Section 3.5. You may mix and match dome and directional antennas as needed to obtain proper coverage throughout the building or area where you need to boost the signal.

If you are using a Yagi exterior antenna, you should normally aim it away from all interior antennas regardless of separation to prevent oscillation.



CAUTION: SIGNAL OSCILLATION CAN CAUSE RADIO INTERFERENCE WITH CELLULAR TOWERS AND RESULT IN CIVIL AND/OR CRIMINAL PENALTIES.

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3.5 - Calculating Signal Strength

You can calculate the number of antennas you will need using the following parameters (in dB):

- **Outside signal level (OSL):** This is the signal strength at the exterior antenna location and will always be a negative number that will usually fall between -50 and -100dBm. Calls will drop at levels of about -100dB and lower.
- **Outside antenna gain (OAG):** This the signal boost provided by the exterior antenna and is always a positive number with Cellphone-Mate antennas.

OAG	Cellular	PCS
CM100-S omni	+5	+5
CM100-L omni	+9	+9
CM288W omni	+3	+3
CM230W Yagi	+10	+11

- **Inside antenna gain (IAG):** This is the signal boost provided by an interior antenna and is always a positive number with Cellphone-Mate antennas.

IAG	Cellular	PCS
CM222W omni dome	+3	+3
CM223 omni dome	+3	+3
CM248W directional panel	+7	+10

- **Cable loss (CL):** This is the signal loss caused by the cable and is always a negative number.

CL	Cellular	PCS
20’ CM400/CM240	-1/-2	-2/-4
30’ CM400/CM240	-2/-4	-3/-6
50’ CM400/CM240	-3/-6	-4/-8
100’ CM400/CM240	-4/-8	-7/-14

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- **Splitter loss (SL):** This is the signal loss caused by a splitter (used if you are installing multiple antennas).

SL	Cellular	PCS
2-way	-3	-3
3-way	-5	-5
4-way	-6	-6

- **Amplifier gain (AG):** Number of decibels of amplification provided by the amplifier (rated gain less any attenuation, as described in Chapter 5 of this manual). This is always a positive number.

The signal strength *S* at an interior antenna equals *OSL+OAG+IAG+CL+SL+AG*. To calculate the approximate coverage distance of each antenna:

1. Calculate the signal strength *S* for the first interior antenna using the preceding formula.
2. Find the signal strength *S* for the antenna along the bottom of the graph on the following page.
3. Move straight up the signal strength line to the PCS and cellular curves.
4. Read the approximate coverage radius on the left.

3.6 - Amplifier Location

Select an indoor location for the amplifier that meets the following criteria:

- Wall or ceiling mounts are acceptable.
- Near a properly grounded 110VAC outlet.
- Not in a tightly enclosed or overly hot space.
- All power and warning lights easily visible.
- Least amount of cable to connect all antennas.

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3.7 - Accessories

The final step in the planning process is to make sure you have all of the necessary accessories to complete the installation. You will need all of the items listed in Chapter 1 of this manual plus some or all of the following:

- **Cable clips:** Use these to secure the cables to interior and exterior walls/ceilings.
- **Appropriately rated sealant/caulking:** Use this to waterproof the opening where the cable from the exterior antenna enters the building, if needed.
- **Hand and/or power tools:** As needed to complete the installation.
- **Personal Protective Equipment (PPE):** Use all PPE required by local codes and/or best practices to help ensure personal safety during installation.

Note: You may need to obtain a permit from your local building department to install the amplifier and antennas. Check your local building and/or electrical codes. You do not need any permits from the FCC or the cellular carrier.

CAUTION: YOU ARE RESPONSIBLE FOR ENSURING THAT THE INSTALLATION MEETS ALL APPLICABLE CODES.

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3.8 - Need Help?

If you need help planning your installation, please contact a qualified installer, the reseller from whom you purchased the amplifier, or Cellphone-Mate, Inc.

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CHAPTER 4: Installation

This chapter describes how to install the amplifier and antennas for best results.

4.1 - Selecting the Locations

Select the locations for the exterior antenna, interior antenna(s), amplifier, cables, and accessories as described in the previous chapter.

CAUTION: FAILURE TO PROPERLY PLAN THE AMPLIFIER INSTALLATION CAN CAUSE SIGNAL OSCILLATION AND/OR OTHER EQUIPMENT MALFUNCTION.

4.2 - Soft Installation

Perform a “soft” installation of all components to test signal coverage and oscillation before making the installation permanent. Avoid making holes or other permanent fixtures during this initial phase. Please refer to Chapter 5 of this manual for configuration and testing instructions. Proceed with the final installation once configuration and testing are complete.

4.3 - Exterior Antenna

Mount the exterior antenna in the location you selected during the planning process. Be sure to follow all of the instructions included with the antenna to ensure a safe installation. Remember:

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- An omnidirectional antenna (CM100-L, CM100-S, etc.) must be mounted vertically.

  (Please not, the CM100-L and CM100-S antennas are dual band and the CM288W and 230W antennas are wide-band.)

- A Yagi antenna (such as the CM230W) must be mounted horizontally and be aimed at the desired cellular tower (line of sight).

CAUTION: MOUNT THE EXTERIOR ANTENNA ON A FIXED STRUCTURE .

WARNING: FAILURE TO EXERCISE CAUTION WHEN WORKING IN HIGH AREAS COULD CAUSE A FALL AND PERSONAL INJURY.

WARNING: DO NOT TOUCH ANY LIVE ELECTRICAL WIRES OR ALLOW THE ANTENNA OR CABLING TO TOUCH ANY LIVE ELECTRICAL WIRES.

CAUTION: AVOID AIMING A YAGI ANTENNA TOWARD ANY INTERIOR ANTENNA .

1. Mount the antenna.
2. Connect a length of CM400 cable to the antenna and tighten until hand-tight.
3. Run the cable along the planned route.
4. Install a properly grounded CMLP lightning protector.
5. Seal any holes you make in the outside of the building with appropriate caulking or sealant.

4.4 - Internal Antennas

Mount the interior antenna(s) in the location(s) you selected during the planning process. Be sure

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to follow the instructions included with the antenna(s) for a safe installation. Remember:

- Dome antennas (CM222W, CM223, etc.) should be mounted in the ceiling as close to the center of the desired coverage area as possible with the domed side pointing down.
- Flat panel antennas (CM248W) should be wall-mounted as close as possible to center of the wall at one end of long narrow space.

CAUTION: VERIFY THAT ALL INTERIOR ANTENNAS MEET THE SEPARATION REQUIREMENTS DESCRIBED IN THE PREVIOUS CHAPTER AND THAT NO ANTENNA IS AIMED TOWARD THE EXTERIOR ANTENNA .

1. Mount the antenna.
2. Connect a length of CM400 or CM240 cable to the antenna and tighten until hand-tight.
3. If you are installing multiple antennas, run the cable to the splitter location and connect the cable to one of the outputs on the splitter.
4. Connect another length of CM400 or CM240 cable to the input side of the splitter (if used) and run this cable to the amplifier location.

CAUTION: DO NOT CONNECT AN INTERIOR ANTENNA TO THE SPLITTER INPUT.

4.5 - Mounting the Amplifier

Mount the amplifier as follows:

1. Verify that the selected location meets all of the criteria described in the previous chapter.

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2. Attach the included mounting kit to the amplifier using the screws provided. Tighten the screws by hand with a screwdriver until snug plus 1/4 to 1/2 turn. Do not over-tighten.
3. Mount the amplifier to the wall using appropriate screws and/or wall anchors. The top side of the amplifier with the lights and DIP switches should be facing away from the wall and be plainly visible when standing near the amplifier.
4. Connect the exterior antenna cable to the **Outside Antenna** port on the amplifier.
5. Connect the interior antenna cable to the **Inside Antenna** port on the amplifier.
6. Verify that all cable connections are snug and that the exterior and interior antennas are connected to the proper jacks.

CAUTION: DO NOT POWER ON THE AMPLIFIER UNTIL INSTRUCTED TO DO SO.

CAUTION: NEVER POWER ON THE AMPLIFIER WHEN ANY ANTENNAS ARE DISCONNECTED AS THIS COULD DAMAGE THE AMPLIFIER.

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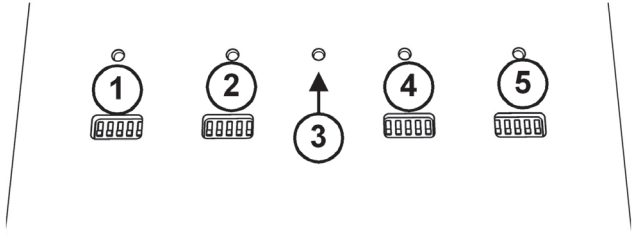
CHAPTER 5: Configuration & Testing

This chapter describes how to power on, configure, and test the amplifier.

5.1 - DIP Switches and Lights

The CM2020 amplifier has the following indicators and controls:

- **PCS Uplink Warning light/DIP switches (1):** These DIP switches control the PCS communications with the cellular tower.
- **PCS Downlink Warning light/DIP switches (2):** These DIP switches control the PCS amplification within the building.
- **Power light (3):** This light should be illuminated or blinking green at all times while the amplifier is powered on.
- **Cellular Downlink Warning light/DIP switches (4):** These DIP switches control the cellular amplification within the building.
- **Cellular Uplink Warning light/DIP switches (5):** These switches control the cellular communications with the tower.



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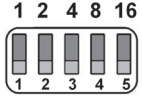
When the amplifier is powered on:

- The green **Power** light (3) should illuminate.
- The red **Warning** lights (1, 2, 4, 5) should remain OFF. If one or more **Warning** lights illuminates, power off the amplifier immediately.

Each bank of DIP switches contains five switches.

- Moving a switch down (away from the indicator lights) turns that switch OFF and increases amplifier gain for the selected channel.



- Moving a switch up (toward the indicator lights) turns that switch ON and decreases amplifier gain for the selected channel.

From left to right, the DIP switches in each bank provide 1, 2, 4, 8, and 16 dB of *attenuation* (reduced amplification). These switches are cumulative, meaning that the total amount of attenuation for a channel is equal to the combined dB of all ON DIP switches in the corresponding bank. For example:

- Turning all switches OFF = 0dB attenuation (amplifier is at full gain).
- Turning ON Switch #1 in a bank = 1dB attenuation (amplifier maximum gain is reduced by 1dB).
- Turning ON Switches #1, 3, and 5 in a bank = 1+4+16dB attenuation = 21dB attenuation. For example, in a 68dB amplifier, this means that the selected channel would be reduced to 47dB (68db-21db).

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- Turning ON all switches in a bank = 1+2+4+8+16dB attenuation = 31dB attenuation. For example, in a 68dB amplifier, that means that the selected channel would be reduced to 37dB (68dB-31dB).

5.2 - Initial Configuration

By default, your amplifier ships with all DIP switches turned OFF to provide maximum gain in all channels. This should always be your starting point whenever installing or reinstalling the amplifier.

5.3 - Powering on the Amplifier

To power on the amplifier:

1. Make sure that exterior and interior antenna cables are snugly connected to the proper ports on the amplifier.
2. Plug a surge suppressor into a grounded 110VAC wall outlet.
3. Plug the AC end of the power adapter that came with the amplifier into the surge suppressor.
4. Plug the DC end of the power adapter into the Power port on the amplifier.

CAUTION: ONLY USE THE POWER SUPPLY INCLUDED WITH THE AMPLIFIER. USE OF ANOTHER POWER SUPPLY COULD DAMAGE THE AMPLIFIER AND/OR POWER SUPPLY.

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5. Verify that the green **Power** light is illuminated.
6. If any red **Warning** light(s) illuminate, immediately power off the amplifier by either unplugging the DC power supply from the surge suppressor or by turning off the switch on the surge suppressor. Increase the attenuation (reduce gain) to the affected channel(s) and try again. If you are at maximum attenuation and still receiving a warning, then you must verify that all antennas have been placed according to these instructions and relocate antennas as needed to eliminate the oscillation. See Section 5.6 for more information.

CAUTION: DO NOT PROCEED BEYOND THIS POINT UNTIL THE AMPLIFIER IS POWERED ON AND NO RED WARNING LIGHTS ARE ILLUMINATED.

7. Once the amplifier is powered on and no red **Warning** lights are illuminated, you may proceed to adjust the amplifier.

5.4 - Testing

Once the amplifier is powered on and no **Warning** lights are illuminated, walk around the entire area to test the voice and/or data signal. Refine the antenna locations and/or gain levels as needed, and then complete the permanent installation once the system is working as desired.

5.5 - Adjusting the Amplifier

Keep the following points in mind when adjusting the amplifier:

- Full power is not always your best option. Your goal is to obtain a usable cellular signal in as

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many areas of the building as possible. A successful installation means that you can make calls without dropping and/or have a reliable data connection.

- Do not expect to see 5 bars of reception everywhere in the building as this is practically impossible. Also, signal strength in dB can vary significantly without necessarily affecting the number of bars displayed because different phone and data card manufacturers handle bars slightly differently.
- A good rule of thumb is that increasing gain by 6dB doubles the coverage distance of the interior antennas. Start at the lowest gain setting and increase gain gradually as needed.
- If one or more red **Warning** lights comes on, oscillation is either happening or is about to happen and protection circuits are activating (if equipped). If oscillation is or becomes severe, the amplifier will power down and will then wake every 30 seconds for the next 15 minutes to see if the problem has been resolved. If the problem has not been resolved after 15 minutes, the amplifier will shut off and will need to be unplugged and plugged back in again to reset.
- You may see oscillation in the 800MHz band and/or the 1900MHz band (see Section 5.6).
- If you can't get the system to work properly, you may need to install an additional interior antenna and/or a different type of interior antenna and/or relocate interior antennas.

Note: In general, the uplink and downlink DIP switches should be set identically but this is not always the case.

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5.6 - Automatic Shutdown

If equipped, the CM2020 amplifier includes an automatic shutdown feature that works in the following sequence:

1. The cellular side (lights 4 and 5 in the diagram on Page 21) is usually the first side to experience oscillation. When oscillation is detected in the uplink and/or downlink, the appropriate **Warning** light(s) will begin flashing red and the **Power** light (light 3 in the diagram on Page 21) will turn red.
2. If oscillation occurs on the PCS side, lights 1 and/or 2 will blink as appropriate and the **Power** light (3) will turn red if it is not already red because of cellular oscillation.
3. If the problem is not resolved, the affected side will shut down after 30 seconds. In general, the cellular side will oscillate more easily than the PCS side.
4. The amplifier will wake back up. When this occurs, the power light will be green. If oscillation resumes, the lights will flash as previously described. These 30-second cycles will continue for 15 minutes or until the problem is resolved.
5. If the problem is not resolved within 15 minutes, the amplifier will shut down (all lights off except the **Power** light, which is red) and must be reset by unplugging it from the power supply and plugging it back in.

To resolve oscillation, increase the antenna separation (Section 3.4) and/or the attenuation (Section 5.1).

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CHAPTER 6: Warranty

This chapter contains the warranty information for your CELLPHONE-MATE product and also contains information on how to contact the company.

6.1 - Warranty Periods

Your warranty includes the following periods:

- **Two-Year Product Warranty:** CELLPHONE-MATE products are covered under a two-year product warranty from the date of purchase. This protects the customer from any defects or problems the product may have that are solely the fault of CELLPHONE-MATE Inc. Incorrect installation or misuse will void this warranty. Upon the return of a defective product, CELLPHONE-MATE will issue the customer a working replacement. All returned packages should contain all products distributed.
- **Five-Year Extended Product Warranty:** A five year warranty is available for purchase on any products sold by CELLPHONE-MATE Inc. A five-year warranty must be obtained at the time of purchase. This warranty adds an additional three years to the two year warranty we provide. All regulations still apply.

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6.2 - Warranty Information

1. CELLPHONE-MATE, Inc. warrants to the Buyer that each of its products will be free from defects in material and workmanship and will perform in full accordance with applicable specifications when shipped. The limit of liability under this warranty is, at CELLPHONE-MATE, Inc.'s option, to repair or replace any product or part thereof which shall, within TWO YEARS of purchase as determined by examination by CELLPHONE-MATE, Inc., prove defective in material and/or workmanship. Warranty returns must first be authorized in writing by CELLPHONE-MATE, Inc. Disassembly of any CELLPHONE-MATE, Inc. product by anyone other than an authorized representative of CELLPHONE-MATE, Inc. voids this warranty in its entirety. CELLPHONE-MATE, Inc. reserves the right to make changes in any of its products without incurring any obligation to make the same changes on previously delivered products.
2. As a condition of the warranties provided for herein, the Buyer will prepay the shipping charges for all products returned to CELLPHONE-MATE, Inc. for repair and CELLPHONE-MATE, Inc. will pay the return shipping with the exception of product returned from outside the United States, in which case the Buyer will pay all shipping charges.
3. The Buyer will pay the cost of inspecting and testing any goods returned under the warranty or otherwise which are found to meet the applicable specifications or which are not defective or not covered by this warranty.
4. Products sold by CELLPHONE-MATE, Inc. shall not be considered defective or non-conform-

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ing to the Buyer's order if they satisfactorily fulfill the performance requirements that were published in the product specification literature, or in accordance with samples provided by CELLPHONE-MATE, Inc. This warranty shall not apply to any products or parts thereof which have been subject to accident, negligence, alteration, abuse, or misuse. CELLPHONE-MATE, Inc. makes no warranty whatsoever in respect to accessories or parts not supplied by it.

5. Limitations of Warranty, Damages and Liability: EXCEPT AS EXPRESSLY SET FORTH HEREIN, THERE ARE NO WARRANTIES, CONDITIONS, GUARANTEES OR REPRESENTATIONS AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTIES, CONDITIONS, GUARANTEES OR REPRESENTATIONS, WHETHER EXPRESSED OR IMPLIED, IN LAW OR IN FACT, ORAL OR IN WRITING. CELLPHONE-MATE, INC.'S AGGREGATE LIABILITY IN DAMAGES OR OTHERWISE SHALL NOT EXCEED THE PAYMENT, IF ANY, RECEIVED BY CELLPHONE-MATE, INC. FOR THE UNIT OF PRODUCT OR SERVICE FURNISHED OR TO BE FURNISHED, AS THE CASE MAY BE, WHICH IS THE SUBJECT OF CLAIM OR DISPUTE. IN NO EVENT SHALL CELLPHONE-MATE, INC. BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, HOWSOEVER CAUSED.
6. All matters regarding this warranty shall be interpreted in accordance with the laws of the State of California and any controversy that cannot be settled directly shall be settled by arbitration in California in accordance with the rules then prevailing of the American Arbitration Association, and judgment upon the

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award rendered may be entered in any court having jurisdiction thereof.

7. If one or more provisions provided herein are held to be invalid or unenforceable under applicable law, then such provision shall be ineffective and excluded to the extent of such invalidity or unenforceability without affecting in any way the remaining provisions herein.
8. CELLPHONE-MATE reserves the right to bill for labor spent on equipment where there is no defective found
9. All items that are out of warranty are subject to a repair fee and additional freight charges.
10. Defective items in warranty will be repaired at no additional charge and will be returned with freight paid by CELLPHONE-MATE.

6.3 - Contact Information

You may consult a Cellphone-Mate, Inc. customer service agent directly by contacting us as follows:

- View the list of Frequently Asked Questions (FAQ) online at *http://www.surecall.com*
- Our online support center is at *www.surecall.com/HelpDeskService.aspx* If needed ,you can create an online support ticket. This is the fastest and best way to get support for your product.
- Write to the address on the web site or call the phone number on the back cover of this manual.

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CHAPTER 7: Regulatory Information

This chapter contains the regulatory information for the FCC (USA) and Industry Canada (Canada).

7.1 - FCC Information

FCC ID: RSNDUAL-85UNDER

Warning: Changes or modifications to this device not expressly approved by Cellphone-Mate, Inc. could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits pursuant to Parts 22 and 24 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

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- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. In accordance with FCC requirements of human exposure to radio frequency fields, the radiating element (antenna) shall be installed such that a minimum separation distance of 25cm (11in) is maintained from all persons.

7.2 - Industry Canada

IC ID: 7784A-D85UNDER

This device meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The term “IC:” before the radio certification number only signifies that Industry Canada technical specifications were met.

RF Exposure: The manufacturer’s rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output is re-radi-

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ated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuating at the output of the device.

Cet appareillage numérique de la classe [B] répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif peut ne pas causer l'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.

Le fabricant nominale de la puissance de sortie de ce matériel est simple transporteur. Pour les situations lorsque plusieurs signauxporteurs sont présents, l'évaluation devrait être réduite de 3.5 dB, en particulier lorsque le signal de sortie est réémise et peut provoquer des interférences adjacentes à la bande utilisateurs. Ce pouvoir est de la réduction par le biais de la sortie d'alimentation ou la réduction de gain et non par un atténuateur à la sortie du dispositif.

Please note: This unit has been approved for use in Canada under RSS 131, however, consent for the use of this device to improve cellular or PCS coverage must be obtained through your cellular or PCS provider prior to placing the unit in operation. Please refer to the Industry Canada document CPC 2-1-05, Section 6.1 available or viewable at: http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf08942e.html.

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