

Sadelco SIGNAL LEVEL METERS

MINIMAX & MINIMAX-M

Operator's Manual

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KEYPAD SUMMARY AND SETUPS

| | |
|-----------------------------|---|
| Tune a Channel Number | n (n=ch number), CH/FRQ |
| Tune a Frequency | n (n=frq number with a decimal point), CH/FRQ |
| Tune a Digital Channel* | From any Channel, Press DIG |
| Verify Current Channel Plan | PLAN (ESC/CLR to return to tuning) |
| Select a New Channel Plan | PLAN, n (n=plan number), ENT or PLAN, UP/DOWN, ENT |
| Program a Favorite Channel | tune channel, FAV, n (n=fav slot number), ENT |
| Recall a Favorite Channel | n (n=fav slot number), FAV |
| Erase a Favorite Channel | n (n=fav slot number), FAV, decimal, ESC/CLR |
| Erase All Favorite Channels | 0, FAV, decimal, ESC/CLR |
| Adjust the Volume | VOL, UP or DOWN, ESC/CLR |
| Beep ON/OFF | VOL, decimal, ESC/CLR |
| Disable Auto Shutoff | decimal, 00, ENT |
| Auto Shutoff 5 minutes | decimal, 05, ENT |
| Auto Shutoff 10 minutes | decimal, 10, ENT |
| View Software Date & Rev | decimal, 80, ENT |
| View Serial Number | decimal, 81, ENT |
| View Last Factory Cal Date | decimal, 82, ENT |
| Disable Power-Out Key | decimal, 98, ENT |
| (Minimax-M Only) | |
| Select dBmV or dBuV | decimal, 99, ENT |

** Minimax-M Models Only - During digital channel measurement, use microammeter scales only for relative peaking. Use LCD readout for absolute value of signal level.*

INTRODUCTION

The Minimax and Minimax-M hand-held meters incorporate state of the art technology to make signal level measurement faster and easier than ever before. Auto-calibration, using a built-in white noise source, corrects every measurement for frequency response, attenuator setting, and temperature. Keypad tuning, an autoranging attenuator and digital readouts allow novice users to take accurate, foolproof readings with minimal training.

The full keypad provides instant access to all channels and frequencies. Dedicated keys for all functions eliminate the need to look up hidden commands or menus. Advanced features include C/N, Hum, Favorite Channel Programming, and \triangle Picture-Audio.

Minimax-M Models have been tailored for the MMDS installer. An extra battery provides switchable 18 V power at the F connector for powering the downconverter and a microammeter makes antenna alignment easy. A special channel plan designed for MMDS is standard on these models.

All models are programmed with the most commonly used channel plans. Additional standard and custom plans are also available.

MINIMAX & MINIMAX-M SPECIFICATIONS

FREQUENCY RANGE

| | |
|--------------------|--------------|
| MINIMAX 600 & M600 | 47 - 600 MHz |
| MINIMAX 800 & M800 | 5 - 872 MHz |

STANDARD CHANNEL PLANS

| | |
|--|---|
| MINIMAX 600, 800: | EIA, HRC, IRC, AIR (VHF, UHF, FM) |
| MINIMAX M600, M800: | EIA, HRC, IRC, AIR (VHF, UHF, FM), MMDS |
| Custom channel plans available on request. | |

TUNING INCREMENTS:

Frequency Mode: 125 KHz
Channel Mode: 6, 7, or 8 MHz

FREQUENCY ACCURACY: +/- 20 KHz

IF BANDWIDTH: 280 KHz at 3 dB points

ADJACENT CHANNEL REJECTION: 40 dB or better

FM SELECTIVITY:

Will distinguish 2 FM signals of similar amplitude 300 KHz apart

MEASUREMENT RANGE:

| | |
|-------------------|------------------------------------|
| MINIMAX Models: | -30 to +50 dBmV (+30 to +110 dBuV) |
| MINIMAX-M Models: | -20 to +40 dBmV (+40 to +100 dBuV) |

AMPLITUDE ACCURACY: Includes frequency response, log linearity and attenuator
+/- 1.0 dB at 77° F (+/- 0.5 dB typical)
+/- 2.0 dB from 0 - 120° F (+/- 1.0 dB typical)

AUTO-CALIBRATION:

Each measurement computer corrected for level, attenuator setting and temperature.
Internal Calibrator: +/- 0.25 dB, 4.5 - 872 MHz White Noise Source

AUTORANGING ATTENUATOR:

Range: MINIMAX: 40 dB, MINIMAX-M: 20 dB
Input: 75 ohm, user replaceable F81 connector
BNC available by special order

DISPLAY:

All Models
Digital LCD: Indicates channel, frequency, and signal level in dBmV (switchable to dBuV)

MINIMAX-M Models only:

Analog Microammeter: Indicates real time signal level for easy antenna orientation,
+/- 1.5 dB

MINIMAX & MINIMAX-M SPECIFICATIONS (Continued)

FEATURES:

Power Out: Extra large battery provides switchable 18V at F connector (MINIMAX-M Models only)

C/N: Range >50 dB with external preselector, Accuracy +/- 2 dB

Hum: 0.5 - 5%, +/- 0.3%, detects all hum up to 600 Hz

Favorite Channels: 9 User Programmable Channels

△PA: Calculates and displays difference between Picture and Audio carriers of same channel .

Audio: Adjustable volume, waterproof mylar speaker

Illumination: Switchable lights for both LCD and Microammeter

Battery Test: Shows battery voltage and elapsed time

Power Supply: Replaceable nicad packs provides > 16 hrs of normal intermittent use

Electronic Shutoff: User adjustable - 5 min, 10 min., continuous

Digital Channel Measurement: Measures average digital power, Accuracy +/-1.8 dB

DIMENSIONS: MINIMAX: 8.5"L x 4" W x 2.5" D, 21 cm x 10 cm x 6 cm

MINIMAX-M: 8.5"L x 4" W x 3.0" D, 21 cm x 10 cm x 7.6 cm

WEIGHT: MINIMAX: 3.1 lbs, 1.4 Kg, including case and batteries

MINIMAX-M: 4.5 lbs, 2.0 Kg, including case and batteries

ACCESSORIES SUPPLIED:

MINIMAX Models:

Water resistant cordura nylon case Part No. CASE002

AC 110 V Charger/Adaptor Part No. T60

Nicad Batteries Part No. BAT02/BAT03

Operator's Manual Part No. ST1003A

MINIMAX-M Models:

Water resistant cordura nylon case Part No. CASE003

AC 110 V Charger/Adaptor Part No. T60

Nicad Batteries Part No. BAT05

Operator's Manual Part No. ST1003A

OPTIONS:

Model SH2 Strand Hook

Model T60E 220 V Charger/Adaptor

Specifications Subject to change without notice.

INITIAL STARTUP

Unpack and inspect the instrument for any visible defects or damage. Claims for shipping damage must be made by the receiver. Make sure to save all packaging materials.

Press and hold ON/OFF key. Make sure to hold the ON/OFF key for one second to allow the meter to lock on.

The LCD Window will briefly display the software rev and then PASS. The meter will perform an Autocalibration and tune to the last channel or frequency tuned before it was shut off.

To adjust volume, Press VOL, UP or DOWN, ESC/CLR.

BATTERY OPERATION AND CHARGING

MINIMAX models are powered by 15 AA high energy nicad batteries. The 15 cells are split into one pack of 7 and one pack of 8. MINIMAX-M models are powered by 15 Sub-C high energy nicad batteries (1 pack). The batteries in your new meter may not be fully charged when you receive it.

Check the battery voltage before using your meter and recharge if necessary.

Charge time is approximately 14 hours.

Use only the proper Sadelco Charger:

AC Charger: T60 for 110V
T60E for 220V

The operating voltage range is approximately 20 Volts to 15 Volts. At 17 Volts, the meter will beep and begin flashing a Lo Bat warning. Under average operating conditions, you will have about 30 minutes left for both models. When the charger is plugged in, the display will show 24 V.

TO CHECK THE BATTERY VOLTAGE

Disconnect the charger.

Minimax Models:

Press the BAT key. The battery voltage will be displayed on the left side of the display.

The Minimax will operate for a minimum of 3.5 hours continuously with a full charge. (> 16 hours of normal intermittent use)

Minimax-M Models:

Press the HUM/BAT key. The Battery voltage will be displayed on the left side of the display. If this key is held down for 3 seconds, the HUM mode will be activated. To escape, press ESC/CLR.

With the power out on, the Minimax-M will operate for a minimum of 4 hours continuously with a full charge (>16 hours of normal intermittent use), or 7 hours with the power out off.

Use of lights, maximum volume, or extremely cold temperature will reduce operating times.

BATTERY OPERATION AND CHARGING (Continued)

USING THE ELAPSED TIME INDICATOR

To help maximize battery power, we have included an elapsed time indicator which appears on the right side of the LCD whenever battery voltage is displayed.

After fully charging the meter, reset the timer to zero by pressing: decimal point, BAT. Now, whenever the meter is used, the operating time is accumulated.

After every 30 minutes of elapsed time, the meter will beep and display the total elapsed time and the battery voltage for 4 seconds.

AUTOMATIC SHUTOFF

To increase the effective battery life, all Minimax and Minimax-M models are equipped with an automatic shutoff circuit. It is factory set at 5 minutes. Any keypad entry during the 5 minutes resets the clock. To turn the meter on after an auto shutoff, press and hold the ON/OFF key.

| | |
|----------------------------------|------------------------------|
| To deactivate the auto shutoff: | Press decimal point, 00, ENT |
| To change setting to 10 minutes: | Press decimal point, 10, ENT |
| To return to 5 minutes: | Press decimal point, 05, ENT |

AUTO-CALIBRATION

Using Sadelco's patented white noise calibration technology in conjunction with stored correction tables, auto-calibrations are performed every two minutes of operation.

Auto-calibrations are also performed:

- when the meter is turned on
- when a new channel is tuned
- when the autoranging attenuator switches pads in or out
- when the internal temperature changes more than 8 degrees

You may notice a momentary delay and hear the clicking of the attenuator during an Auto-calibration. The display is frozen during this time.

SIGNAL LEVEL MEASUREMENT

GENERAL PROCEDURE

1. Turn power ON.
2. Check battery.
3. Connect RF signal to input.
4. Select Channel or Frequency via keypad.
5. Select Picture or Audio carrier using Δ PA Key.
6. Read signal level on right side of LCD display.
(The microammeter also indicates level on MINIMAX-M models)

AUTORANGING ATTENUATOR

The autoranging attenuator eliminates the need to manually switch pads in or out to bring the signal level in range. You will hear some clicking as the relays are switched in and out. If the RF signal is above or below the meter's range, the LCD will indicate this by flashing Or (Over Range) or Ur (Under Range). On MINIMAX-M Models, the microammeter will automatically change ranges as necessary. LEDs indicate the proper scale to read. If the RF signal is above or below the meter's range, the microammeter will peg right or left respectively.

CHANNEL PLAN SELECTION

Refer to Appendix A for a list of standard channel plans programmed into your meter.

Additional standard and custom plans are available from the factory.

Press the PLAN key to view the current channel plan on the LCD.

To select another plan:

1. Press the PLAN key.
2. Enter the number of the Plan or scroll to another plan using the UP/DOWN keys.
3. Press the ENT key.
4. The meter will tune to Channel 2 Picture carrier of the new plan.

TUNING BY CHANNEL NUMBER

1. Press the desired channel number. Leading zeros such as 02 are not necessary.
2. Press CH/FRQ.

By not using a decimal point, the meter automatically tunes to either the Picture or Audio Carrier of the channel number that was entered. The display will indicate the channel number followed by a P for Picture or an A for Audio and the signal level.

Example: CH 2P -8.7

If an invalid channel number is selected, the meter defaults to the previously tuned channel or frequency.

AUTOMATIC Δ PA CALCULATION

To automatically toggle between Picture and Audio carriers of the same channel and calculate the Δ (difference) between them:

1. Tune to a Picture carrier.
2. Press the Δ PA key to switch to the Audio carrier.
3. Press the Δ PA key again to calculate and display the Δ PA.
4. Press the Δ PA key again to return to the Picture carrier.

Note: the Δ PA function can not be activated in the digital channel mode.

TUNING BY FREQUENCY

1. Enter the desired frequency number including a decimal point.
2. Press CH/FRQ.

The meter will tune and display frequencies in 125 KHz steps. If the entered frequency does not fall on one of the 125 KHz steps, the meter will tune to and display the closest step. Offsets up to +/-40 KHz are read with negligible error.

You must enter a decimal point even for frequencies that are whole numbers such as 54.00 MHz. The decimal point tells the meter to tune to a frequency instead of a channel. You do not have to enter zeros after the decimal point.

TUNING USING THE UP/DOWN KEYS

The UP/DOWN keys function in all three tuning modes: Channel, Frequency, and Favorite Channel.

In the Channel Mode, each press of the UP or DOWN key initiates a 6 MHz shift to the next carrier (7 MHz or 8 MHz in some European Tables).

In the Frequency Mode, each press of the UP or DOWN key initiates a 125 KHz shift.

TUNING USING THE UP/DOWN KEYS (*Continued*)

In the Favorite Channel Mode, each press of the Up or Down key initiates a jump to the next programmed channel or frequency.

In all modes, when the top or bottom of the tuning range is reached, it will loop around continuously.

SWITCHING BETWEEN CHANNEL AND FREQUENCY

When tuned to a channel, pressing the CH/FRQ key will display the frequency of that channel and switch the meter to the Frequency Mode.

When tuned to a frequency, pressing the CH/FRQ key will display the channel number of that frequency and switch the meter to the Channel Mode. If no channel number exists for a particular frequency, the meter will tune to either the closest picture or audio carrier depending on which mode the Δ PA is in.

TUNING SUB BAND, UHF, AND SPECIAL CHANNELS

Some channel plans contain more than one channel with the same channel number. In order to provide direct keypad access to all channels, we have added an additional number in front of the channel number in some cases. Refer to Appendix A for complete channel listings.

Sub Band channels, T07 - T13 can be accessed directly by entering 707 - 713.

In the MMDS Channel Plan, UHF Channels 14 - 70 are selected directly by entering 914 - 970.

In the AIR Channel Plan, UHF Channels are selected by entering 14 - 70.

For example:

The MMDS Channel Plan contains:

| Channel Name | Channel No. | Keypad Entry | Frequency |
|---------------------|--------------------|---------------------|------------------|
| MDS1 | Channel 14 | 14 | 123.25 MHz |
| UHF14 | Channel 14 | 914 | 471.25 MHz |
| A1 | Channel 24 | 24 | 223.25 MHz |
| UHF24 | Channel 24 | 924 | 531.25 MHz |

The EIA Channel Plan contains:

| Channel Name | Channel No. | Keypad Entry | Frequency |
|---------------------|--------------------|---------------------|------------------|
| T07 | Channel 7 | 707 | 7.00 MHz |
| VHF7 | Channel 7 | 7 | 175.25 MHz |
| T13 | Channel 13 | 713 | 43.00 MHz |
| VHF13 | Channel 13 | 13 | 211.25 MHz |

USING THE MMDS POWER OUT FACILITY

All MINIMAX-M models come equipped with an extra large built-in battery that provides a switchable 18V DC power supply out of the F connector.

This feature is used to power MMDS antenna mounted downconverters during installation. **Do not activate this feature when connected to a CATV or MATV system.**

To activate, Press the DOWN/CONV key. PWR OUT LED lights, 18V is present at the F connector.

To deactivate, Press the DOWN/CONV key again

DISABLING MMDS POWER OUT

To prevent accidental activation when connected to a CATV or MATV system:

Press decimal point, 98, ENT.

Repeat to enable Power Out Key.

HUM MEASUREMENT

On MINIMAX-M models, the HUM function shares a key with the BAT check. This requires the operator to hold the key down for 3 seconds to activate HUM. During this 3 seconds, the battery condition is displayed. On the MINIMAX models, the HUM key is separate so it needs only to be pressed to activate HUM.

Measurement of HUM (low frequency disturbance) can be made on any active audio carrier or unmodulated CW signal. A minimum signal level of -20 dBmV for the Minimax and -11 dBmV for the Minimax-M is required for Hum measurement.

To measure HUM:

1. Tune to the Picture or Audio carrier of the channel you wish to measure or tune to the frequency of the CW signal.
2. Press HUM (Hold for 3 seconds on MINIMAX-M models).
3. HUM will be displayed in %. (If Hum is >6%, the display will flash 6%).
4. Press ESC/CLR to return to signal level measurement mode.

Note: If you tune to a picture carrier using a channel number, the meter automatically switches to the corresponding audio carrier before making the HUM measurement. If you tune to a picture carrier using a frequency number, the meter remains at that frequency and attempts to measure HUM. This feature allows HUM measurement of a CW signal at any frequency but will give incorrect HUM measurements if the entered frequency is an active picture carrier.

Note: Hum cannot be activated in the digital channel measurement mode.

VISUAL CARRIER TO NOISE RATIO

Noise measurements on active cable systems are effected by many factors such as carrier sidebands, harmonic products, and spurious beats.

Ideal measurements are made by using a band pass filter to isolate the channel being tested and by shutting off the carrier before making the noise measurement. Refer to the NCTA recommended practices for guidelines on making the best measurements under various conditions.

Use of a low noise preamplifier is recommended when signal levels are below +20 dBmV.

Method One

This is the preferred method when conditions permit.

1. Connect a band pass filter between the test point and the meter.
2. Tune to the desired picture carrier using channel number or frequency.
3. Press the C/N key. The meter stores the carrier level.
4. If you tuned using a channel number the meter will switch to the corresponding frequency and begin to flash. If you tuned using a frequency, the meter will remain in the frequency mode and begin to flash.
5. Shut off the carrier.
6. Press the ENT key. The meter reads the noise level, adds a correction factor, calculates and displays the C/N ratio.
7. Press ESC/CLR to return to the signal level mode.

Method Two

If you cannot turn off the carrier.

1. Connect a band pass filter between the test point and the meter.
2. Tune to the desired picture carrier using channel number or frequency.
3. Press the C/N key. The meter stores the carrier level.
4. If you tuned using a channel number the meter will switch to the corresponding frequency and begin to flash. If you tuned using a frequency, the meter will remain in the frequency mode and begin to flash.
5. Use the UP/DOWN keys or number keys and CHN/FRQ to search for the lowest noise level near the channel. This is often 1.5 MHz below the carrier but will depend on the shape of your filter.
6. When you have found the lowest noise reading, press ENT. The meter reads the noise level, adds a correction factor, calculates and displays the C/N ratio.
7. Press ESC/CLR to return to the signal level mode.

VISUAL CARRIER TO NOISE RATIO (Continued)

Method Three

When you cannot shut off the carrier and you do not have a band pass filter.

1. Locate a channel that does not have another channel below it, or where there is a band guard. Tune to the picture carrier of that channel using channel number or frequency.
2. Press the C/N key. The meter stores the carrier level.
3. If you tuned using a channel number the meter will switch to the corresponding frequency and begin to flash. If you tuned using a frequency, the meter will remain in the frequency mode and begin to flash.
4. Use the UP/DOWN keys or number keys and CHN/FRQ to search for the lowest noise level near the channel. This is often 1.5 MHz below the carrier.
5. When you have found the lowest noise reading, press ENT. The meter reads the noise level, adds a correction factor, calculates and displays the C/N ratio.
6. Press ESC/CLR to return to the signal level mode.

DIGITAL CHANNEL MEASUREMENT MODE

This Minimax is equipped with a digital channel measurement facility. It is activated by a quick press of the CN/DIG key.

Note: If this key is held down, the Carrier to Noise function will be activated. To exit the Carrier to Noise function, press ESC/CLR.

To Measure a Digital Channel: From any channel, Press (do not hold) "CN/DIG". The display will flash "digtL on", then "di" followed by the channel number and the signal level.

During digital channel measurements, the LCD readout is automatically corrected to show the average power level of a 6 MHz digital channel.

The microammeter (Minimax-M models only) is not corrected during digital channel reading and thus shows a lower, incorrect level. Use the microammeter only for peaking during digital channel reading.

The Minimax remains in the Digital Mode until the CN/DIG key is pressed again.

Once in the Digital Mode:

- Tune other digital channels using either the UP/DOWN or number keys followed by CH.
- All Favorite Channels are measured as digital even if they were programmed in the analog mode.
- The Δ PA and HUM functions cannot be activated.
- The Minimax remains in the digital mode after shutoff and restart.

To return to normal analog channel reading: Press (do not hold) "CN/DIG".

The display will flash "digtL OFF"

Note: To activate Carrier to Noise measurement, Press and Hold the CN/DIG key.

FAVORITE CHANNEL PROGRAMMING

GENERAL INFORMATION

The MINIMAX can store up to 9 favorite channels in each channel plan. You may store channel numbers and/or frequencies in any order and combination.

Favorite channels can be programmed in the normal analog channel mode or digital channel measurement mode. Favorite channels are measured as either digital, if in the digital mode, or analog, if in the normal analog mode.

To enter the Favorite Channel Mode, you must first program one or more favorite channels, and then recall one of them.

Once in the Favorite Channel Mode, pressing the UP/DOWN keys will switch in the next programmed favorite channel. Any unprogrammed slots will be skipped and the unit will loop from the highest to the lowest slot.

You can perform the C/N, Hum, CH/FRQ, and Δ PA functions using your favorite channels. You can also change the Optional User Settings for the Auto shutoff, Volume, Beep ON/OFF, and dBmV - dBuV in the Favorite Channel Mode.

To exit the Favorite Channel Mode, press ESC, tune a channel using a valid channel number followed by CH/FRQ, or select a new channel plan.

Note: When in the digital channel measurement mode all favorite channels are measured as digital even if they were programmed in the normal analog mode.

PROGRAMMING FAVORITE CHANNELS AND FREQUENCIES

1. Tune the meter to the channel or frequency you wish to store.
2. Select the Favorite Slot (1 - 9) you wish to store it in, press FAV, then press ENT.

Example: Store CH 2 Picture, EIA (Table 1) into Favorite Slot #1.

Make sure the desired Channel Plan has been selected.

Enter 2

Enter CHN/FRQ

Enter Δ PA to select Picture if necessary

Enter FAV

Enter 1

Enter ENT

Example: Store 67.250 MHz into Favorite Slot #2

Enter 67.250

Enter CH/FRQ

Enter FAV

Enter 2

Enter ENT

Repeat the above procedures to program additional Favorite Channels.

Note: Programming a Favorite Channel does not switch the meter into the Favorite Channel Mode. This can only be done by recalling a previously programmed Favorite Channel.

ERASING FAVORITE CHANNELS

To change the frequency or channel in a particular Favorite Channel Slot, just reprogram over the old information.

To erase a Favorite Channel completely, enter the number of the slot (1-9), FAV, decimal point, CLR.

To erase all Favorite Channels in a channel table at once enter 0, FAV, decimal point, CLR.

RECALLING FAVORITE CHANNELS

Enter the Favorite Channel number (1-9)

Enter FAV

You may now use the UP/DOWN keys to recall other favorite channels or you may recall them by repeating the above procedure with a new FAV channel number.

ERROR CODES

1. F---Err

This code appears if the user tries to recall a Favorite Channel Number which has not been programmed. Meter defaults to previously tuned channel.

2. Error Chn

This code appears if the user tries to switch to Channel from a Frequency which has no associated channel. Meter defaults to previously tuned Frequency.

3. Error tbl

This code appears if the meter cannot access the previously selected channel table. Minimax will default to Table 1-EIA. Minimax-M will default to Table 5 dS1. User must reselect desired channel plan if other than default plan.

4. Ur - Under Range

This code appears if the signal level is too low (or nonexistent) to measure.

5. Or - Over Range

This code appears if the signal level is too high to measure. An external attenuator pad can be used to bring the signal level into range.

6. Error -Hu

This code appears if the signal level is too low (below -20 dBmV for Minimax and below -11 dBmV for Minimax-M) to measure hum.

7. Error +Hu

This code appears if the signal level is too high (above +50 dBmV for Minimax and above +40 dBmV for Minimax-M) to measure hum.

WARRANTY POLICY

Sadelco warrants all instruments against defects in material and workmanship for a period of twelve months after shipment. Sadelco will repair or replace any assembly or component (except batteries) found to be defective under normal use during this period. Sadelco's obligation under this warranty is limited solely to repairing any such instrument which, in Sadelco's opinion, proves to be defective within the scope of the warranty when returned to the factory. Transportation to the factory is to be prepaid by the purchaser. Return transportation via UPS surface will be provided by Sadelco. Should the customer request an alternate shipping method, the customer will be solely responsible for any charges in excess of UPS surface rates.

This warranty does not apply to any products repaired or altered by any persons not authorized by Sadelco, or not in accordance with instructions furnished by Sadelco. If the instrument is defective as a result of misuse, improper repair, or abnormal conditions of operation, the warranty will become void. In doubtful cases we will contact the purchaser for repair authorization. Please notify us if an estimate is required.

Sadelco assumes no responsibility for its products being used in a hazardous manner either alone or in conjunction with other equipment. Sadelco assumes no liability for secondary damages and, in any event, Sadelco's liability for breach of warranty under any contract or otherwise shall not exceed the purchase price of the specific product shipped and against which a claim is made.

An RMA number is not required to return either warranty or repair units to Sadelco. However, Sadelco assumes no liability for any product in transit to Sadelco. Please make sure to include a description of the problem or symptom along with your complete company name, address, telephone, fax, and contact person.

For Warranty or Repair service return to:

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APPENDIX A

CHANNEL TABLES

APPENDIX A: CHANNEL PLANS

Listed below are the standard channel plans for various MINIMAX and MINIMAX-M models. Not all models contain all plans. Models with limited frequency ranges contain only the appropriate portions of the plans.

Since some plans have more than one channel with the same channel number, the first column lists the keypad entry for direct access to a channel and the second column lists the channel number as it is displayed on the LCD.

Additional standard and custom channel plans are available from the factory.

Plan 1 - EIA (NTSC, NCTA)

Standard USA cable channel plan

Plan 2 - HRC

Picture and audio carriers are offset 1.25 MHz lower than EIA Plan 1.

Exception Channels 5 & 6 which are 0.75 MHz higher. Channel 1 added.

Plan 3 - IRC

Same as EIA Plan 1 except channels 5 & 6 which are offset 2 MHz higher.

Channel 1 added.

Plan 4 - AIR

Standard USA over the air VHF & UHF channels

Plan 5 - MMDS1 (display indicates DS1)

Standard USA over the air VHF & UHF, MMDS channels 24 - 54 (A1 - G4), MDS1 channel 14, and MDS2 channel 99.

Plan 6 - Custom

Plan 7 - Custom

Plan 8 - Custom

Plan 9 - Custom

EIA CHANNEL PLAN
Plan 1

Display=EIA

| Keypad Entry | Channel Display | Picture | Audio |
|--------------|-----------------|---------|--------|
| 707 | C i07 | 7.00 | 11.50 |
| 708 | C i08 | 13.00 | 17.50 |
| 709 | C i09 | 19.00 | 23.50 |
| 710 | C i10 | 25.00 | 29.50 |
| 711 | C i11 | 31.00 | 35.50 |
| 712 | C i12 | 37.00 | 41.50 |
| 713 | C i13 | 43.00 | 47.50 |
| 2 | Ch 2 | 55.25 | 59.75 |
| 3 | Ch 3 | 61.25 | 65.75 |
| 4 | Ch 4 | 67.25 | 71.75 |
| 5 | Ch 5 | 77.25 | 81.75 |
| 6 | Ch 6 | 83.25 | 87.75 |
| 95 | Ch 95 | 91.25 | 95.75 |
| 96 | Ch 96 | 97.25 | 101.75 |
| 97 | Ch 97 | 103.25 | 107.75 |
| 98 | Ch 98 | 109.25 | 113.75 |
| 99 | Ch 99 | 115.25 | 119.75 |
| 14 | Ch 14 | 121.25 | 125.75 |
| 15 | Ch 15 | 127.25 | 131.75 |
| 16 | Ch 16 | 133.25 | 137.75 |
| 17 | Ch 17 | 139.25 | 143.75 |
| 18 | Ch 18 | 145.25 | 149.75 |
| 19 | Ch 19 | 151.25 | 155.75 |
| 20 | Ch 20 | 157.25 | 161.75 |
| 21 | Ch 21 | 163.25 | 167.75 |
| 22 | Ch 22 | 169.25 | 173.75 |
| 7 | Ch 7 | 175.25 | 179.75 |
| 8 | Ch 8 | 181.25 | 185.75 |
| 9 | Ch 9 | 187.25 | 191.75 |
| 10 | Ch 10 | 193.25 | 197.75 |
| 11 | Ch 11 | 199.25 | 203.75 |
| 12 | Ch 12 | 205.25 | 209.75 |
| 13 | Ch 13 | 211.25 | 215.75 |
| 23 | Ch 23 | 217.25 | 221.75 |
| 24 | Ch 24 | 223.25 | 227.75 |
| 25 | Ch 25 | 229.25 | 233.75 |
| 26 | Ch 26 | 235.25 | 239.75 |
| 27 | Ch 27 | 241.25 | 245.75 |
| 28 | Ch 28 | 247.25 | 251.75 |
| 29 | Ch 29 | 253.25 | 257.75 |
| 30 | Ch 30 | 259.25 | 263.75 |
| 31 | Ch 31 | 265.25 | 269.75 |
| 32 | Ch 32 | 271.25 | 275.75 |
| 33 | Ch 33 | 277.25 | 281.75 |
| 34 | Ch 34 | 283.25 | 287.75 |
| 35 | Ch 35 | 289.25 | 293.75 |
| 36 | Ch 36 | 295.25 | 299.75 |

| Keypad Entry | Channel Display | Picture | Audio |
|--------------|-----------------|---------|--------|
| 37 | Ch 37 | 301.25 | 305.75 |
| 38 | Ch 38 | 307.25 | 311.75 |
| 39 | Ch 39 | 313.25 | 317.75 |
| 40 | Ch 40 | 319.25 | 323.75 |
| 41 | Ch 41 | 325.25 | 329.75 |
| 42 | Ch 42 | 331.25 | 335.75 |
| 43 | Ch 43 | 337.25 | 341.75 |
| 44 | Ch 44 | 343.25 | 347.75 |
| 45 | Ch 45 | 349.25 | 353.75 |
| 46 | Ch 46 | 355.25 | 359.75 |
| 47 | Ch 47 | 361.25 | 365.75 |
| 48 | Ch 48 | 367.25 | 371.75 |
| 49 | Ch 49 | 373.25 | 377.75 |
| 50 | Ch 50 | 379.25 | 383.75 |
| 51 | Ch 51 | 385.25 | 389.75 |
| 52 | Ch 52 | 391.25 | 395.75 |
| 53 | Ch 53 | 397.25 | 401.75 |
| 54 | Ch 54 | 403.25 | 407.75 |
| 55 | Ch 55 | 409.25 | 413.75 |
| 56 | Ch 56 | 415.25 | 419.75 |
| 57 | Ch 57 | 421.25 | 425.75 |
| 58 | Ch 58 | 427.25 | 431.75 |
| 59 | Ch 59 | 433.25 | 437.75 |
| 60 | Ch 60 | 439.25 | 443.75 |
| 61 | Ch 61 | 445.25 | 449.75 |
| 62 | Ch 62 | 451.25 | 455.75 |
| 63 | Ch 63 | 457.25 | 461.75 |
| 64 | Ch 64 | 463.25 | 467.75 |
| 65 | Ch 65 | 469.25 | 473.75 |
| 66 | Ch 66 | 475.25 | 479.75 |
| 67 | Ch 67 | 481.25 | 485.75 |
| 68 | Ch 68 | 487.25 | 491.75 |
| 69 | Ch 69 | 493.25 | 497.75 |
| 70 | Ch 70 | 499.25 | 503.75 |
| 71 | Ch 71 | 505.25 | 509.75 |
| 72 | Ch 72 | 511.25 | 515.75 |
| 73 | Ch 73 | 517.25 | 521.75 |
| 74 | Ch 74 | 523.25 | 527.75 |
| 75 | Ch 75 | 529.25 | 533.75 |
| 76 | Ch 76 | 535.25 | 539.75 |
| 77 | Ch 77 | 541.25 | 545.75 |
| 78 | Ch 78 | 547.25 | 551.75 |
| 79 | Ch 79 | 553.25 | 557.75 |
| 80 | Ch 80 | 559.25 | 563.75 |
| 81 | Ch 81 | 565.25 | 569.75 |
| 82 | Ch 82 | 571.25 | 575.75 |
| 83 | Ch 83 | 577.25 | 581.75 |

| Keypad Entry | Channel Display | Picture | Audio |
|--------------|-----------------|---------|--------|
| 84 | Ch 84 | 583.25 | 587.75 |
| 85 | Ch 85 | 589.25 | 593.75 |
| 86 | Ch 86 | 595.25 | 599.75 |
| 87 | Ch 87 | 601.25 | 605.75 |
| 88 | Ch 88 | 607.25 | 611.75 |
| 89 | Ch 89 | 613.25 | 617.75 |
| 90 | Ch 90 | 619.25 | 623.75 |
| 91 | Ch 91 | 625.25 | 629.75 |
| 92 | Ch 92 | 631.25 | 635.75 |
| 93 | Ch 93 | 637.25 | 641.75 |
| 94 | Ch 94 | 643.25 | 647.75 |
| 100 | Ch100 | 649.25 | 653.75 |
| 101 | Ch101 | 655.25 | 659.75 |
| 102 | Ch102 | 661.25 | 665.75 |
| 103 | Ch103 | 667.25 | 671.75 |
| 104 | Ch104 | 673.25 | 677.75 |
| 105 | Ch105 | 679.25 | 683.75 |
| 106 | Ch106 | 685.25 | 689.75 |
| 107 | Ch107 | 691.25 | 695.75 |
| 108 | Ch108 | 697.25 | 701.75 |
| 109 | Ch109 | 703.25 | 707.75 |
| 110 | Ch110 | 709.25 | 713.75 |
| 111 | Ch111 | 715.25 | 719.75 |
| 112 | Ch112 | 721.25 | 725.75 |
| 113 | Ch113 | 727.25 | 731.75 |
| 114 | Ch114 | 733.25 | 737.75 |
| 115 | Ch115 | 739.25 | 743.75 |
| 116 | Ch116 | 745.25 | 749.75 |
| 117 | Ch117 | 751.25 | 755.75 |
| 118 | Ch118 | 757.25 | 761.75 |
| 119 | Ch119 | 763.25 | 767.75 |
| 120 | Ch120 | 769.25 | 773.75 |
| 121 | Ch121 | 775.25 | 779.75 |
| 122 | Ch122 | 781.25 | 785.75 |
| 123 | Ch123 | 787.25 | 791.75 |
| 124 | Ch124 | 793.25 | 797.75 |
| 125 | Ch125 | 799.25 | 803.75 |
| 126 | Ch126 | 805.25 | 809.75 |
| 127 | Ch127 | 811.25 | 815.75 |
| 128 | Ch128 | 817.25 | 821.75 |
| 129 | Ch129 | 823.25 | 827.75 |
| 130 | Ch130 | 829.25 | 833.75 |
| 131 | Ch131 | 835.25 | 839.75 |
| 132 | Ch132 | 841.25 | 845.75 |
| 133 | Ch133 | 847.25 | 851.75 |
| 134 | Ch134 | 853.25 | 857.75 |
| 135 | Ch135 | 859.25 | 863.75 |
| 136 | Ch136 | 865.25 | 869.75 |

HRC CHANNEL PLAN
Plan 2

Display=hrc

| Keypad Entry | Channel Display | Picture | Audio |
|--------------|-----------------|---------|--------|
| 707 | C t07 | 7.00 | 11.50 |
| 708 | C t08 | 13.00 | 17.50 |
| 709 | C t09 | 19.00 | 23.50 |
| 710 | C t10 | 25.00 | 29.50 |
| 711 | C t11 | 31.00 | 35.50 |
| 712 | C t12 | 37.00 | 41.50 |
| 713 | C t13 | 43.00 | 47.50 |
| 2 | Ch 2 | 54.00 | 58.50 |
| 3 | Ch 3 | 60.00 | 64.50 |
| 4 | Ch 4 | 66.00 | 70.50 |
| 1 | Ch 1 | 72.00 | 76.50 |
| 5 | Ch 5 | 78.00 | 82.50 |
| 6 | Ch 6 | 84.00 | 88.50 |
| 95 | Ch 95 | 90.00 | 94.50 |
| 96 | Ch 96 | 96.00 | 100.50 |
| 97 | Ch 97 | 102.00 | 106.50 |
| 98 | Ch 98 | 108.00 | 112.50 |
| 99 | Ch 99 | 114.00 | 118.50 |
| 14 | Ch 14 | 120.00 | 124.50 |
| 15 | Ch 15 | 126.00 | 130.50 |
| 16 | Ch 16 | 132.00 | 136.50 |
| 17 | Ch 17 | 138.00 | 142.50 |
| 18 | Ch 18 | 144.00 | 148.50 |
| 19 | Ch 19 | 150.00 | 154.50 |
| 20 | Ch 20 | 156.00 | 160.50 |
| 21 | Ch 21 | 162.00 | 166.50 |
| 22 | Ch 22 | 168.00 | 172.50 |
| 7 | Ch 7 | 174.00 | 178.50 |
| 8 | Ch 8 | 180.00 | 184.50 |
| 9 | Ch 9 | 186.00 | 190.50 |
| 10 | Ch 10 | 192.00 | 196.50 |
| 11 | Ch 11 | 198.00 | 202.50 |
| 12 | Ch 12 | 204.00 | 208.50 |
| 13 | Ch 13 | 210.00 | 214.50 |
| 23 | Ch 23 | 216.00 | 220.50 |
| 24 | Ch 24 | 222.00 | 226.50 |
| 25 | Ch 25 | 228.00 | 232.50 |
| 26 | Ch 26 | 234.00 | 238.50 |
| 27 | Ch 27 | 240.00 | 244.50 |
| 28 | Ch 28 | 246.00 | 250.50 |
| 29 | Ch 29 | 252.00 | 256.50 |
| 30 | Ch 30 | 258.00 | 262.50 |
| 31 | Ch 31 | 264.00 | 268.50 |
| 32 | Ch 32 | 270.00 | 274.50 |
| 33 | Ch 33 | 276.00 | 280.50 |
| 34 | Ch 34 | 282.00 | 286.50 |
| 35 | Ch 35 | 288.00 | 292.50 |

| Keypad Entry | Channel Display | Picture | Audio |
|--------------|-----------------|---------|--------|
| 36 | Ch 36 | 294.00 | 298.50 |
| 37 | Ch 37 | 300.00 | 304.50 |
| 38 | Ch 38 | 306.00 | 310.50 |
| 39 | Ch 39 | 312.00 | 316.50 |
| 40 | Ch 40 | 318.00 | 322.50 |
| 41 | Ch 41 | 324.00 | 328.50 |
| 42 | Ch 42 | 330.00 | 334.50 |
| 43 | Ch 43 | 336.00 | 340.50 |
| 44 | Ch 44 | 342.00 | 346.50 |
| 45 | Ch 45 | 348.00 | 352.50 |
| 46 | Ch 46 | 354.00 | 358.50 |
| 47 | Ch 47 | 360.00 | 364.50 |
| 48 | Ch 48 | 366.00 | 370.50 |
| 49 | Ch 49 | 372.00 | 376.50 |
| 50 | Ch 50 | 378.00 | 382.50 |
| 51 | Ch 51 | 384.00 | 388.50 |
| 52 | Ch 52 | 390.00 | 394.50 |
| 53 | Ch 53 | 396.00 | 400.50 |
| 54 | Ch 54 | 402.00 | 406.50 |
| 55 | Ch 55 | 408.00 | 412.50 |
| 56 | Ch 56 | 414.00 | 418.50 |
| 57 | Ch 57 | 420.00 | 424.50 |
| 58 | Ch 58 | 426.00 | 430.50 |
| 59 | Ch 59 | 432.00 | 436.50 |
| 60 | Ch 60 | 438.00 | 442.50 |
| 61 | Ch 61 | 444.00 | 448.50 |
| 62 | Ch 62 | 450.00 | 454.50 |
| 63 | Ch 63 | 456.00 | 460.50 |
| 64 | Ch 64 | 462.00 | 466.50 |
| 65 | Ch 65 | 468.00 | 472.50 |
| 66 | Ch 66 | 474.00 | 478.50 |
| 67 | Ch 67 | 480.00 | 484.50 |
| 68 | Ch 68 | 486.00 | 490.50 |
| 69 | Ch 69 | 492.00 | 496.50 |
| 70 | Ch 70 | 498.00 | 502.50 |
| 71 | Ch 71 | 504.00 | 508.50 |
| 72 | Ch 72 | 510.00 | 514.50 |
| 73 | Ch 73 | 516.00 | 520.50 |
| 74 | Ch 74 | 522.00 | 526.50 |
| 75 | Ch 75 | 528.00 | 532.50 |
| 76 | Ch 76 | 534.00 | 538.50 |
| 77 | Ch 77 | 540.00 | 544.50 |
| 78 | Ch 78 | 546.00 | 550.50 |
| 79 | Ch 79 | 552.00 | 556.50 |
| 80 | Ch 80 | 558.00 | 562.50 |
| 81 | Ch 81 | 564.00 | 568.50 |
| 82 | Ch 82 | 570.00 | 574.50 |
| 83 | Ch 83 | 576.00 | 580.50 |

| Keypad Entry | Channel Display | Picture | Audio |
|--------------|-----------------|---------|--------|
| 84 | Ch 84 | 582.00 | 586.50 |
| 85 | Ch 85 | 588.00 | 592.50 |
| 86 | Ch 86 | 594.00 | 598.50 |
| 87 | Ch 87 | 600.00 | 604.50 |
| 88 | Ch 88 | 606.00 | 610.50 |
| 89 | Ch 89 | 612.00 | 616.50 |
| 90 | Ch 90 | 618.00 | 622.50 |
| 91 | Ch 91 | 624.00 | 628.50 |
| 92 | Ch 92 | 630.00 | 634.50 |
| 93 | Ch 93 | 636.00 | 640.50 |
| 94 | Ch 94 | 642.00 | 646.50 |
| 100 | Ch100 | 648.00 | 652.50 |
| 101 | Ch101 | 654.00 | 658.50 |
| 102 | Ch102 | 660.00 | 664.50 |
| 103 | Ch103 | 666.00 | 670.50 |
| 104 | Ch104 | 672.00 | 676.50 |
| 105 | Ch105 | 678.00 | 682.50 |
| 106 | Ch106 | 684.00 | 688.50 |
| 107 | Ch107 | 690.00 | 694.50 |
| 108 | Ch108 | 696.00 | 700.50 |
| 109 | Ch109 | 702.00 | 706.50 |
| 110 | Ch110 | 708.00 | 712.50 |
| 111 | Ch111 | 714.00 | 718.50 |
| 112 | Ch112 | 720.00 | 724.50 |
| 113 | Ch113 | 726.00 | 730.50 |
| 114 | Ch114 | 732.00 | 736.50 |
| 115 | Ch115 | 738.00 | 742.50 |
| 116 | Ch116 | 744.00 | 748.50 |
| 117 | Ch117 | 750.00 | 754.50 |
| 118 | Ch118 | 756.00 | 760.50 |
| 119 | Ch119 | 762.00 | 766.50 |
| 120 | Ch120 | 768.00 | 772.50 |
| 121 | Ch121 | 774.00 | 778.50 |
| 122 | Ch122 | 780.00 | 784.50 |
| 123 | Ch123 | 786.00 | 790.50 |
| 124 | Ch124 | 792.00 | 796.50 |
| 125 | Ch125 | 798.00 | 802.50 |
| 126 | Ch126 | 804.00 | 808.50 |
| 127 | Ch127 | 810.00 | 814.50 |
| 128 | Ch128 | 816.00 | 820.50 |
| 129 | Ch129 | 822.00 | 826.50 |
| 130 | Ch130 | 828.00 | 832.50 |
| 131 | Ch131 | 834.00 | 838.50 |
| 132 | Ch132 | 840.00 | 844.50 |
| 133 | Ch133 | 846.00 | 850.50 |
| 134 | Ch134 | 852.00 | 856.50 |
| 135 | Ch135 | 858.00 | 862.50 |
| 136 | Ch136 | 864.00 | 868.50 |

IRC CHANNEL PLAN
Plan 3

Display=irc

| Keypad Entry | Channel Display | Picture | Audio |
|-----------------|--------------------|---------|--------|
| 707 | C t07 | 7.00 | 11.50 |
| 708 | C t08 | 13.00 | 17.50 |
| 709 | C t09 | 19.00 | 23.50 |
| 710 | C t10 | 25.00 | 29.50 |
| 711 | C t11 | 31.00 | 35.50 |
| 712 | C t12 | 37.00 | 41.50 |
| 713 | C t13 | 43.00 | 47.50 |
| 2 | Ch 2 | 55.25 | 59.75 |
| 3 | Ch 3 | 61.25 | 65.75 |
| 4 | Ch 4 | 67.25 | 71.75 |
| 1 | Ch 1 | 73.25 | 77.75 |
| 5 | Ch 5 | 79.25 | 83.75 |
| 6 | Ch 6 | 85.25 | 89.75 |
| 95 | Ch 95 | 91.25 | 95.75 |
| 96 | Ch 96 | 97.25 | 101.75 |
| 97 | Ch 97 | 103.25 | 107.75 |
| 98 | Ch 98 | 109.25 | 113.75 |
| 99 | Ch 99 | 115.25 | 119.75 |
| 14 | Ch 14 | 121.25 | 125.75 |
| 15 | Ch 15 | 127.25 | 131.75 |
| 16 | Ch 16 | 133.25 | 137.75 |
| 17 | Ch 17 | 139.25 | 143.75 |
| 18 | Ch 18 | 145.25 | 149.75 |
| 19 | Ch 19 | 151.25 | 155.75 |
| 20 | Ch 20 | 157.25 | 161.75 |
| 21 | Ch 21 | 163.25 | 167.75 |
| 22 | Ch 22 | 169.25 | 173.75 |
| 7 | Ch 7 | 175.25 | 179.75 |
| 8 | Ch 8 | 181.25 | 185.75 |
| 9 | Ch 9 | 187.25 | 191.75 |
| 10 | Ch 10 | 193.25 | 197.75 |
| 11 | Ch 11 | 199.25 | 203.75 |
| 12 | Ch 12 | 205.25 | 209.75 |
| 13 | Ch 13 | 211.25 | 215.75 |
| 23 | Ch 23 | 217.25 | 221.75 |
| 24 | Ch 24 | 223.25 | 227.75 |
| 25 | Ch 25 | 229.25 | 233.75 |
| 26 | Ch 26 | 235.25 | 239.75 |
| 27 | Ch 27 | 241.25 | 245.75 |
| 28 | Ch 28 | 247.25 | 251.75 |
| 29 | Ch 29 | 253.25 | 257.75 |
| 30 | Ch 30 | 259.25 | 263.75 |
| 31 | Ch 31 | 265.25 | 269.75 |
| 32 | Ch 32 | 271.25 | 275.75 |
| 33 | Ch 33 | 277.25 | 281.75 |
| 34 | Ch 34 | 283.25 | 287.75 |
| 35 | Ch 35 | 289.25 | 293.75 |

| Keypad Entry | Channel Display | Picture | Audio |
|-----------------|--------------------|---------|--------|
| 36 | Ch 36 | 295.25 | 299.75 |
| 37 | Ch 37 | 301.25 | 305.75 |
| 38 | Ch 38 | 307.25 | 311.75 |
| 39 | Ch 39 | 313.25 | 317.75 |
| 40 | Ch 40 | 319.25 | 323.75 |
| 41 | Ch 41 | 325.25 | 329.75 |
| 42 | Ch 42 | 331.25 | 335.75 |
| 43 | Ch 43 | 337.25 | 341.75 |
| 44 | Ch 44 | 343.25 | 347.75 |
| 45 | Ch 45 | 349.25 | 353.75 |
| 46 | Ch 46 | 355.25 | 359.75 |
| 47 | Ch 47 | 361.25 | 365.75 |
| 48 | Ch 48 | 367.25 | 371.75 |
| 49 | Ch 49 | 373.25 | 377.75 |
| 50 | Ch 50 | 379.25 | 383.75 |
| 51 | Ch 51 | 385.25 | 389.75 |
| 52 | Ch 52 | 391.25 | 395.75 |
| 53 | Ch 53 | 397.25 | 401.75 |
| 54 | Ch 54 | 403.25 | 407.75 |
| 55 | Ch 55 | 409.25 | 413.75 |
| 56 | Ch 56 | 415.25 | 419.75 |
| 57 | Ch 57 | 421.25 | 425.75 |
| 58 | Ch 58 | 427.25 | 431.75 |
| 59 | Ch 59 | 433.25 | 437.75 |
| 60 | Ch 60 | 439.25 | 443.75 |
| 61 | Ch 61 | 445.25 | 449.75 |
| 62 | Ch 62 | 451.25 | 455.75 |
| 63 | Ch 63 | 457.25 | 461.75 |
| 64 | Ch 64 | 463.25 | 467.75 |
| 65 | Ch 65 | 469.25 | 473.75 |
| 66 | Ch 66 | 475.25 | 479.75 |
| 67 | Ch 67 | 481.25 | 485.75 |
| 68 | Ch 68 | 487.25 | 491.75 |
| 69 | Ch 69 | 493.25 | 497.75 |
| 70 | Ch 70 | 499.25 | 503.75 |
| 71 | Ch 71 | 505.25 | 509.75 |
| 72 | Ch 72 | 511.25 | 515.75 |
| 73 | Ch 73 | 517.25 | 521.75 |
| 74 | Ch 74 | 523.25 | 527.75 |
| 75 | Ch 75 | 529.25 | 533.75 |
| 76 | Ch 76 | 535.25 | 539.75 |
| 77 | Ch 77 | 541.25 | 545.75 |
| 78 | Ch 78 | 547.25 | 551.75 |
| 79 | Ch 79 | 553.25 | 557.75 |
| 80 | Ch 80 | 559.25 | 563.75 |
| 81 | Ch 81 | 565.25 | 569.75 |
| 82 | Ch 82 | 571.25 | 575.75 |
| 83 | Ch 83 | 577.25 | 581.75 |

| Keypad Entry | Channel Display | Picture | Audio |
|-----------------|--------------------|---------|--------|
| 84 | Ch 84 | 583.25 | 587.75 |
| 85 | Ch 85 | 589.25 | 593.75 |
| 86 | Ch 86 | 595.25 | 599.75 |
| 87 | Ch 87 | 601.25 | 605.75 |
| 88 | Ch 88 | 607.25 | 611.75 |
| 89 | Ch 89 | 613.25 | 617.75 |
| 90 | Ch 90 | 619.25 | 623.75 |
| 91 | Ch 91 | 625.25 | 629.75 |
| 92 | Ch 92 | 631.25 | 635.75 |
| 93 | Ch 93 | 637.25 | 641.75 |
| 94 | Ch 94 | 643.25 | 647.75 |
| 100 | Ch100 | 649.25 | 653.75 |
| 101 | Ch101 | 655.25 | 659.75 |
| 102 | Ch102 | 661.25 | 665.75 |
| 103 | Ch103 | 667.25 | 671.75 |
| 104 | Ch104 | 673.25 | 677.75 |
| 105 | Ch105 | 679.25 | 683.75 |
| 106 | Ch106 | 685.25 | 689.75 |
| 107 | Ch107 | 691.25 | 695.75 |
| 108 | Ch108 | 697.25 | 701.75 |
| 109 | Ch109 | 703.25 | 707.75 |
| 110 | Ch110 | 709.25 | 713.75 |
| 111 | Ch111 | 715.25 | 719.75 |
| 112 | Ch112 | 721.25 | 725.75 |
| 113 | Ch113 | 727.25 | 731.75 |
| 114 | Ch114 | 733.25 | 737.75 |
| 115 | Ch115 | 739.25 | 743.75 |
| 116 | Ch116 | 745.25 | 749.75 |
| 117 | Ch117 | 751.25 | 755.75 |
| 118 | Ch118 | 757.25 | 761.75 |
| 119 | Ch119 | 763.25 | 767.75 |
| 120 | Ch120 | 769.25 | 773.75 |
| 121 | Ch121 | 775.25 | 779.75 |
| 122 | Ch122 | 781.25 | 785.75 |
| 123 | Ch123 | 787.25 | 791.75 |
| 124 | Ch124 | 793.25 | 797.75 |
| 125 | Ch125 | 799.25 | 803.75 |
| 126 | Ch126 | 805.25 | 809.75 |
| 127 | Ch127 | 811.25 | 815.75 |
| 128 | Ch128 | 817.25 | 821.75 |
| 129 | Ch129 | 823.25 | 827.75 |
| 130 | Ch130 | 829.25 | 833.75 |
| 131 | Ch131 | 835.25 | 839.75 |
| 132 | Ch132 | 841.25 | 845.75 |
| 133 | Ch133 | 847.25 | 851.75 |
| 134 | Ch134 | 853.25 | 857.75 |
| 135 | Ch135 | 859.25 | 863.75 |
| 136 | Ch136 | 865.25 | 869.75 |

OVER-THE AIR CHANNEL PLAN

Plan 4

Display=Air

| | Keypad Entry | Channel Display | Picture | Audio |
|-----|-----------------|--------------------|---------|--------|
| VHF | 2 | Ch 2 | 55.25 | 59.75 |
| VHF | 3 | Ch 3 | 61.25 | 65.75 |
| VHF | 4 | Ch 4 | 67.25 | 71.75 |
| VHF | 5 | Ch 5 | 77.25 | 81.75 |
| VHF | 6 | Ch 6 | 83.25 | 87.75 |
| VHF | 7 | Ch 7 | 175.25 | 179.75 |
| VHF | 8 | Ch 8 | 181.25 | 185.75 |
| VHF | 9 | Ch 9 | 187.25 | 191.75 |
| VHF | 10 | Ch 10 | 193.25 | 197.75 |
| VHF | 11 | Ch 11 | 199.25 | 203.75 |
| VHF | 12 | Ch 12 | 205.25 | 209.75 |
| VHF | 13 | Ch 13 | 211.25 | 215.75 |
| UHF | 14 | Ch 14 | 471.25 | 475.75 |
| UHF | 15 | Ch 15 | 477.25 | 481.75 |
| UHF | 16 | Ch 16 | 483.25 | 487.75 |
| UHF | 17 | Ch 17 | 489.25 | 493.75 |
| UHF | 18 | Ch 18 | 495.25 | 499.75 |
| UHF | 19 | Ch 19 | 501.25 | 505.75 |
| UHF | 20 | Ch 20 | 507.25 | 511.75 |
| UHF | 21 | Ch 21 | 513.25 | 517.75 |
| UHF | 22 | Ch 22 | 519.25 | 523.75 |
| UHF | 23 | Ch 23 | 525.25 | 529.75 |
| UHF | 24 | Ch 24 | 531.25 | 535.75 |
| UHF | 25 | Ch 25 | 537.25 | 541.75 |
| UHF | 26 | Ch 26 | 543.25 | 547.75 |
| UHF | 27 | Ch 27 | 549.25 | 553.75 |
| UHF | 28 | Ch 28 | 555.25 | 559.75 |
| UHF | 29 | Ch 29 | 561.25 | 565.75 |
| UHF | 30 | Ch 30 | 567.25 | 571.75 |
| UHF | 31 | Ch 31 | 573.25 | 577.75 |
| UHF | 32 | Ch 32 | 579.25 | 583.75 |
| UHF | 33 | Ch 33 | 585.25 | 589.75 |
| UHF | 34 | Ch 34 | 591.25 | 595.75 |
| UHF | 35 | Ch 35 | 597.25 | 601.75 |
| UHF | 36 | Ch 36 | 603.25 | 607.75 |
| UHF | 37 | Ch 37 | 609.25 | 613.75 |
| UHF | 38 | Ch 38 | 615.25 | 619.75 |
| UHF | 39 | Ch 39 | 621.25 | 625.75 |
| UHF | 40 | Ch 40 | 627.25 | 631.75 |

| | Keypad Entry | Channel Display | Picture | Audio |
|-----|-----------------|--------------------|---------|--------|
| UHF | 41 | Ch 41 | 633.25 | 637.75 |
| UHF | 42 | Ch 42 | 639.25 | 643.75 |
| UHF | 43 | Ch 43 | 645.25 | 649.75 |
| UHF | 44 | Ch 44 | 651.25 | 655.75 |
| UHF | 45 | Ch 45 | 657.25 | 661.75 |
| UHF | 46 | Ch 46 | 663.25 | 667.75 |
| UHF | 47 | Ch 47 | 669.25 | 673.75 |
| UHF | 48 | Ch 48 | 675.25 | 679.75 |
| UHF | 49 | Ch 49 | 681.25 | 685.75 |
| UHF | 50 | Ch 50 | 687.25 | 691.75 |
| UHF | 51 | Ch 51 | 693.25 | 697.75 |
| UHF | 52 | Ch 52 | 699.25 | 703.75 |
| UHF | 53 | Ch 53 | 705.25 | 709.75 |
| UHF | 54 | Ch 54 | 711.25 | 715.75 |
| UHF | 55 | Ch 55 | 717.25 | 721.75 |
| UHF | 56 | Ch 56 | 723.25 | 727.75 |
| UHF | 57 | Ch 57 | 729.25 | 733.75 |
| UHF | 58 | Ch 58 | 735.25 | 739.75 |
| UHF | 59 | Ch 59 | 741.25 | 745.75 |
| UHF | 60 | Ch 60 | 747.25 | 751.75 |
| UHF | 61 | Ch 61 | 753.25 | 757.75 |
| UHF | 62 | Ch 62 | 759.25 | 763.75 |
| UHF | 63 | Ch 63 | 765.25 | 769.75 |
| UHF | 64 | Ch 64 | 771.25 | 775.75 |
| UHF | 65 | Ch 65 | 777.25 | 781.75 |
| UHF | 66 | Ch 66 | 783.25 | 787.75 |
| UHF | 67 | Ch 67 | 789.25 | 793.75 |
| UHF | 68 | Ch 68 | 795.25 | 799.75 |
| UHF | 69 | Ch 69 | 801.25 | 805.75 |
| UHF | 70 | Ch 70 | 807.25 | 811.75 |
| UHF | 71 | Ch 71 | 813.25 | 817.75 |
| UHF | 72 | Ch 72 | 819.25 | 823.75 |
| UHF | 73 | Ch 73 | 825.25 | 829.75 |
| UHF | 74 | Ch 74 | 831.25 | 835.75 |
| UHF | 75 | Ch 75 | 837.25 | 841.75 |
| UHF | 76 | Ch 76 | 843.25 | 847.75 |
| UHF | 77 | Ch 77 | 849.25 | 853.75 |
| UHF | 78 | Ch 78 | 855.25 | 859.75 |
| UHF | 79 | Ch 79 | 861.25 | 865.75 |
| UHF | 80 | Ch 80 | 867.25 | 871.75 |

| USA MMDS/AIR CHANNEL PLAN | | | | | | | | | |
|---------------------------|--------|---------|---------|--------|-------------|--------|---------|---------|--------|
| Plan 5 | | | | | Display=ds1 | | | | |
| | Keypad | Channel | Picture | Audio | | Keypad | Channel | Picture | Audio |
| | Entry | Display | | | | Entry | Display | | |
| VHF | 2 | Ch 2 | 55.25 | 59.75 | UHF | 925 | C U25 | 537.25 | 541.75 |
| VHF | 3 | Ch 3 | 61.25 | 65.75 | UHF | 926 | C U26 | 543.25 | 547.75 |
| VHF | 4 | Ch 4 | 67.25 | 71.75 | UHF | 927 | C U27 | 549.25 | 553.75 |
| VHF | 5 | Ch 5 | 77.25 | 81.75 | UHF | 928 | C U28 | 555.25 | 559.75 |
| VHF | 6 | Ch 6 | 83.25 | 87.75 | UHF | 929 | C U29 | 561.25 | 565.75 |
| MDS2 | 99 | Ch 99 | 117.25 | 121.75 | UHF | 930 | C U30 | 567.25 | 571.75 |
| MDS1 | 14 | Ch 14 | 123.25 | 127.75 | UHF | 931 | C U31 | 573.25 | 577.75 |
| VHF | 7 | Ch 7 | 175.25 | 179.75 | UHF | 932 | C U32 | 579.25 | 583.75 |
| VHF | 8 | Ch 8 | 181.25 | 185.75 | UHF | 933 | C U33 | 585.25 | 589.75 |
| VHF | 9 | Ch 9 | 187.25 | 191.75 | UHF | 934 | C U34 | 591.25 | 595.75 |
| VHF | 10 | Ch 10 | 193.25 | 197.75 | UHF | 935 | C U35 | 597.25 | 601.75 |
| VHF | 11 | Ch 11 | 199.25 | 203.75 | UHF | 936 | C U36 | 603.25 | 607.75 |
| VHF | 12 | Ch 12 | 205.25 | 209.75 | UHF | 937 | C U37 | 609.25 | 613.75 |
| VHF | 13 | Ch 13 | 211.25 | 215.75 | UHF | 938 | C U38 | 615.25 | 619.75 |
| A1 | 24 | Ch 24 | 223.25 | 227.75 | UHF | 939 | C U39 | 621.25 | 625.75 |
| B1 | 25 | Ch 25 | 229.25 | 233.75 | UHF | 940 | C U40 | 627.25 | 631.75 |
| A2 | 26 | Ch 26 | 235.25 | 239.75 | UHF | 941 | C U41 | 633.25 | 637.75 |
| B2 | 27 | Ch 27 | 241.25 | 245.75 | UHF | 942 | C U42 | 639.25 | 643.75 |
| A3 | 28 | Ch 28 | 247.25 | 251.75 | UHF | 943 | C U43 | 645.25 | 649.75 |
| B3 | 29 | Ch 29 | 253.25 | 257.75 | UHF | 944 | C U44 | 651.25 | 655.75 |
| A4 | 30 | Ch 30 | 259.25 | 263.75 | UHF | 945 | C U45 | 657.25 | 661.75 |
| B4 | 31 | Ch 31 | 265.25 | 269.75 | UHF | 946 | C U46 | 663.25 | 667.75 |
| C1 | 32 | Ch 32 | 271.25 | 275.75 | UHF | 947 | C U47 | 669.25 | 673.75 |
| D1 | 33 | Ch 33 | 277.25 | 281.75 | UHF | 948 | C U48 | 675.25 | 679.75 |
| C2 | 34 | Ch 34 | 283.25 | 287.75 | UHF | 949 | C U49 | 681.25 | 685.75 |
| D2 | 35 | Ch 35 | 289.25 | 293.75 | UHF | 950 | C U50 | 687.25 | 691.75 |
| C3 | 36 | Ch 36 | 295.25 | 299.75 | UHF | 951 | C U51 | 693.25 | 697.75 |
| D3 | 37 | Ch 37 | 301.25 | 305.75 | UHF | 952 | C U52 | 699.25 | 703.75 |
| C4 | 38 | Ch 38 | 307.25 | 311.75 | UHF | 953 | C U53 | 705.25 | 709.75 |
| D4 | 39 | Ch 39 | 313.25 | 317.75 | UHF | 954 | C U54 | 711.25 | 715.75 |
| E1 | 40 | Ch 40 | 319.25 | 323.75 | UHF | 955 | C U55 | 717.25 | 721.75 |
| F1 | 41 | Ch 41 | 325.25 | 329.75 | UHF | 956 | C U56 | 723.25 | 727.75 |
| E2 | 42 | Ch 42 | 331.25 | 335.75 | UHF | 957 | C U57 | 729.25 | 733.75 |
| F2 | 43 | Ch 43 | 337.25 | 341.75 | UHF | 958 | C U58 | 735.25 | 739.75 |
| E3 | 44 | Ch 44 | 343.25 | 347.75 | UHF | 959 | C U59 | 741.25 | 745.75 |
| F3 | 45 | Ch 45 | 349.25 | 353.75 | UHF | 960 | C U60 | 747.25 | 751.75 |
| E4 | 46 | Ch 46 | 355.25 | 359.75 | UHF | 961 | C U61 | 753.25 | 757.75 |
| F4 | 47 | Ch 47 | 361.25 | 365.75 | UHF | 962 | C U62 | 759.25 | 763.75 |
| G1 | 48 | Ch 48 | 367.25 | 371.75 | UHF | 963 | C U63 | 765.25 | 769.75 |
| H1 | 49 | Ch 49 | 373.25 | 377.75 | UHF | 964 | C U64 | 771.25 | 775.75 |
| G2 | 50 | Ch 50 | 379.25 | 383.75 | UHF | 965 | C U65 | 777.25 | 781.75 |
| H2 | 51 | Ch 51 | 385.25 | 389.75 | UHF | 966 | C U66 | 783.25 | 787.75 |
| G3 | 52 | Ch 52 | 391.25 | 395.75 | UHF | 967 | C U67 | 789.25 | 793.75 |
| H3 | 53 | Ch 53 | 397.25 | 401.75 | UHF | 968 | C U68 | 795.25 | 799.75 |
| G4 | 54 | Ch 54 | 403.25 | 407.75 | UHF | 969 | C U69 | 801.25 | 805.75 |
| UHF | 914 | C U14 | 471.25 | 475.75 | UHF | 970 | C U70 | 807.25 | 811.75 |
| UHF | 915 | C U15 | 477.25 | 481.75 | UHF | 971 | C U71 | 813.25 | 817.75 |
| UHF | 916 | C U16 | 483.25 | 487.75 | UHF | 972 | C U72 | 819.25 | 823.75 |
| UHF | 917 | C U17 | 489.25 | 493.75 | UHF | 973 | C U73 | 825.25 | 829.75 |
| UHF | 918 | C U18 | 495.25 | 499.75 | UHF | 974 | C U74 | 831.25 | 835.75 |
| UHF | 919 | C U19 | 501.25 | 505.75 | UHF | 975 | C U75 | 837.25 | 841.75 |
| UHF | 920 | C U20 | 507.25 | 511.75 | UHF | 976 | C U76 | 843.25 | 847.75 |
| UHF | 921 | C U21 | 513.25 | 517.75 | UHF | 977 | C U77 | 849.25 | 853.75 |
| UHF | 922 | C U22 | 519.25 | 523.75 | UHF | 978 | C U78 | 855.25 | 859.75 |
| UHF | 923 | C U23 | 525.25 | 529.75 | UHF | 979 | C U79 | 861.25 | 865.75 |
| UHF | 924 | C U24 | 531.25 | 535.75 | UHF | 980 | C U80 | 867.25 | 871.75 |