

ChannelWorks



Cable TV Installer's Guide

Part Number: EK-DECTV-IG. B01

Federal Communications Commission (FCC)

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The following statement applies only to the ChannelWorks bridge:

This equipment generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules, which are designed to provide reasonable protection against such radio frequency interference.

Any changes or modification to this equipment may void the user's authority to operate this equipment.

Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

ChannelWorks

Cable TV Installer's Guide

February 1994

This manual, in conjunction with the *ChannelWorks Network Installer's Guide* and the *ChannelWorks Management* manual, describes how to install the ChannelWorks bridge. This manual is intended for the hardware installer and network manager.

Supersession/Update Information:	This is a revised manual.
Operating System and Version:	LCB Revision 2.0
Management Utilities Version:	LCC Revision 2.0



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The Canadian Department of Communications label identifies certain equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

User's should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



Caution - Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Acoustics - Declared values per ISO 9296 and ISO 7779

	Sound Power Level L_{WAd} , B	Sound Pressure Level L_{pAm} , dBA (bystander positions)
Product	Idle/Operate	Idle/Operate
DECTV-AA	5.0	35

[Current values for specific configurations are available from Digital representatives.
1 B = 10 dBA.]

Schallemissionswerte - Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779

	Schalleistungspegel L_{WAd} , B	Schalldruckpegel L_{pAm} , dBA (Zuschauerpositionen)
Produkt	Leerlauf/Betrieb	Leerlauf/Betrieb
DECTV-AB	5.0	35

[Aktuelle Werte für spezielle Ausstattungsstufen sind über die Digital Equipment Vertretungen erhältlich. 1 B = 10 dBA.]

Nippon - Japan

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About This Book

The *ChannelWorks Cable TV Installation Guide* guides you through:

- A cable TV network overview
- Setting up the cable TV headend translator
- Preparing the cable TV network for data communications
- Configuring and installing the ChannelWorks Bridge
- TransMaster frequency switch settings

The *ChannelWorks Cable TV Installation Guide* provides a brief description of the ChannelWorks Bridge as well as its major specifications, illustrated instructions for setting up the cable TV headend translator, and verifying the cable TV network's signal levels.

Who Should Use This Book

The *ChannelWorks Cable TV Installation Guide* is for use by cable TV technicians and installation technicians trained to perform ChannelWorks Bridge system installations.

This manual is also written for system and network managers responsible for planning and installing ChannelWorks Bridge systems.

You must be familiar with cable TV systems. Many of the operations described by this manual could disrupt the entire cable TV system if performed improperly.

This manual assumes you are familiar with the bridge's architecture and its technical terms such as Pacer, max loop delay, and so on. If you are not familiar with these terms, refer to the *ChannelWorks Management* manual.

You must have the permission and authorization of the cable TV system operator before you begin the installation.

Document Organization

The *ChannelWorks Cable TV Installation Guide* is organized as follows:

- Chapter 1, “Introduction,” provides a physical description of the ChannelWorks Bridge, its input/output connections, and specifications along with the location and descriptions of the unit’s diagnostic and status LEDs. Chapter 1 also provides a list of required tools and materials.
- Chapter 2, “Cable TV Network Overview,” describes the ChannelWorks Bridge in a typical Metropolitan Area Network and contains brief descriptions of various cable TV network architectures and elements.
- Chapter 3, “Preparing the Cable TV Network,” includes set up procedures for the TransMaster, frequency agile headend translator. This chapter also explains how to verify and set the proper network operating signal levels.
- Chapter 4, “Bringing Up the ChannelWorks Bridge,” explains how to configure the ChannelWorks Bridge using the PC based Management Utility. This chapter also explains how to turn the power on and verify the ChannelWorks Bridge is operational.
- Appendix A, “TransMaster Frequency Switch Settings,” includes all input and output switch settings for the TransMaster from 10 to 550 Mhz in 250-KHz increments in tabular format.

Conventions Used In This Guide

Convention	Meaning
<i>Italic Font</i>	<p>Italic Font is used for titles books or to give special emphasis. For example:</p> <p>For more information refer to the <i>ChannelWorks Network Installer's Guide</i>.</p>
Special Type	<p>Special Type (Courier Font) indicates messages or prompts from the system that appear on your screen. For example:</p> <p>Configuration successfully installed.</p>
Special Bold Type	<p>Special Bold Type (Courier Bold Font) is used within text instructions and in screen examples to show characters or words that you type. for example:</p> <p>At the prompt, type AA000400AB04.</p> <div data-bbox="664 919 1086 1020" style="border: 1px solid black; border-radius: 10px; padding: 10px; text-align: center;"><p>prompt> passwd</p></div>
A Capitalized Word	<p>A Capitalized Word within text indicates a key that you press. For example:</p> <p>Press Return.</p> <p>When you see two key names, press and hold the first key, and then type the second character. For example:</p> <p>To press Control-C, press and hold the Control key, and then type an uppercase C.</p>

Associated Documents

Refer to the following documents for further information:

- *ChannelWorks Network Installer's Guide* - Describes connecting cable TV network and Ethernet/802.3 network cables and using the PC based Subscriber Utility to verify the ChannelWorks Bridge operating parameters.
- *ChannelWorks Management* - Describes using the bridge's Management Utility to set up the ChannelWorks Bridge operating parameters, preparing the bridge for Serial Line Interface Protocol operation, using the bridge's enterprise specific MIB variables to diagnose and resolve network problems, and accessing and interpreting the bridge's SNMP enterprise specific MIB Support History file.

Safety Precautions

This preface provides safety precautions to follow when installing the ChannelWorks Bridge.

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all warnings and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source matches the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following international symbols appear in this book when you must perform procedures requiring proximity to electrical current.



Caution - You risk damaging your equipment if you do not heed the instructions.



Achtung - Wenn Sie die Anweisungen nicht beachten, könnten Sie Ihre Geräte beschädigen.



Attention - vous risquez d'endommager votre équipement si vous ne vous conformez pas aux instructions.



Precaución - Se pueden ocasionar daños al equipo si no se siguen atentamente las instrucciones.



Warning - Hazardous voltages are present. To lessen the risk of electrical shock and danger to personal health, follow the instructions carefully.



Warnung - Im Gerät herrscht gefährliche Hochspannung. Beachten Sie die Anweisungen genau, um die elektrische Schläge und Gefahren für Ihre Gesundheit zu vermeiden.



Danger - Présence de tensions dangereuses. Pour limiter les risques d'accidents électriques et de blessures corporelles, suivez les instructions à la lettre.



Aviso - Existe la presencia de tensiones peligrosas. Para disminuir el riesgo de accidentes eléctricos y daños personales, hay que seguir las instrucciones al pie de la letra.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. The ChannelWorks Bridge may not meet regulatory compliance if modified.

Placement of the ChannelWorks Bridge



Caution - To ensure reliable operation of the ChannelWorks Bridge and to protect it from overheating, openings in the equipment must not be blocked or covered. The ChannelWorks Bridge should never be placed near a radiator heat register.



Achtung - Um einen zuverlässigen Betrieb der ChannelWorks-Brücke zu gewährleisten und sie vor Überhitzung zu schützen, dürfen Geräteöffnungen nicht verstopft oder abgedeckt werden. Die ChannelWorks-Brücke sollte nicht in der Nähe von Heizkörpern aufgestellt werden.



Attention - Pour assurer le bon fonctionnement de ChannelWorks Bridge et pour le mettre à l'abri de toute surchauffe, les ouvertures ne doivent être ni entravées, ni recouvertes. ChannelWorks Bridge ne doit jamais être placé à proximité d'un accumulateur de chaleur thermique.



Precaución - Para garantizar el buen funcionamiento de ChannelWorks Bridge y para protegerlo de un eventual recalentamiento, las aberturas no deben quedar obstruidas o recubiertas. ChannelWorks Bridge no debe jamás colocarse cerca de un acumulador de calor térmico.

Power Cord Connection



Warning - The ChannelWorks Bridge is designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug the ChannelWorks Bridge into any other type of power system. Contact your facilities manager or certified electrician if you are not sure what type of power is supplied to your building.



Warnung - Die ChannelWorks-Brücke ist für den Betrieb mit einphasigen Stromversorgungssystemen ausgelegt, die einen geerdeten neutralen Leiter haben. Um die Gefahr elektrischer Schläge zu reduzieren, dürfen Sie das Gerät nicht an andere Stromversorgungssysteme anschließen. Wenn Sie nicht wissen, welche Stromart in Ihrem Gebäude zur Verfügung steht, bitten Sie Ihren Hausverwalter oder einen zugelassenen Elektriker um Auskunft.



Danger - ChannelWorks Bridge est conçu pour un fonctionnement avec des systèmes d'alimentation mono-phasés pourvus d'un conducteur neutre mis à la terre. Pour limiter les risques d'accidents électriques, ne connectez pas ChannelWorks Bridge à un autre type d'alimentation. Contactez le directeur du site ou un électricien certifié si vous ne connaissez pas le type d'alimentation dont est pourvu le bâtiment.



Aviso - ChannelWorks Bridge ha sido concebido para funcionar con sistemas de alimentación monofásicos provistos de un conductor neutro puesto a tierra. Para disminuir el riesgo de accidentes eléctricos, no hay que enchufar este equipo a ningún otro tipo de sistema de alimentación. Hay que ponerse en contacto con el administrador de la instalación o con un electricista autorizado en caso de duda sobre el tipo de alimentación que posee el edificio.



Warning - The ChannelWorks Bridge is shipped with a grounding type (three-wire) power cord. To reduce the risk of shock, always plug the cord into a grounded power outlet.



Warung - Die ChannelWorks-Brücke wird mit einem geerdeten (3 adrigen) Kabel geliefert. Schließen Sie das Gerät immer an eine geerdete Steckdose an, um Stromschläge zu vermeiden.



Danger - ChannelWorks Bridge est livré avec un cordon d'alimentation bipolaire plus terre (3 fils). Pour limiter les risques d'accidents électriques, branchez toujours ce cordon sur une prise de terre.



Aviso - ChannelWorks Bridge se entrega con un cable de alimentación provisto de un contacto a tierra (3 hilos). Para disminuir el riesgo de accidentes eléctricos, hay que conectar siempre este equipo a una toma de alimentación con conexión a tierra.

The ChannelWorks Bridge Cover



Warning - It is not safe to operate the ChannelWorks Bridge without the cover in place. Failure to take this precaution may result in personal injury and system damage.



Warnung - Der Betrieb der ChannelWorks-Brücke ohne Abdeckung ist gefährlich. Wenn Sie diese Vorsichtsmaßnahme nicht beachten, riskieren Sie Personen- und Sachschäden.



Danger - Il est dangereux d'utiliser ChannelWorks Bridge sans son couvercle. Le non-respect de cette précaution peut entraîner des blessures corporelles ou endommager le système.



Aviso - Puede resultar peligroso operar el ChannelWorks Bridge sin su tapa. Si no se observa esta precaución se pueden sufrir daños personales o averiar el sistema.

Known Problems

The following items are under investigation:

1. The ChannelWorks Bridge operation has been verified at frequencies corresponding to standard NCTA channel assignments. For optimal receiver operation avoid using the following forward (RX) frequencies:
 - 79.000 MHz
 - 85.000
 - 93.000
 - 105.000
 - 141.000
 - 429.000
 - 465.000 MHz
2. The LANcity Management Utility (LCM) prevents the user from entering illegal and non-optimized Max Round Trip Delay values. However, the ChannelWorks Bridge software does not prevent the user from entering less than optimal Max Round Trip Delay value when performing SNMP “sets” on the enterprise specific MIB variable `lcmaxrndtripdel` in the ASIC Parameters group.
3. The Support History Log does not consider an error code at two different error levels as unique, which could be misleading as in the following example:

If error 0x35 is logged as a level 2 and at a later time error id 0x35 is logged at a level 4, when displaying the Support History Log the second error as shows as a level 2 crash.
4. The LANcity Subscriber Utility (LCS) and the LCM do not operate properly on a 66 MHz PC.
5. The PROM Monitor’s `printcfg` command displays an incorrect software version value under the “Vers” heading. The “Description” heading displays the correct software version. You can also use the SNMP enterprise specific MIB variable `lcsoftware` in the Revision Levels group to view the correct software version.
6. Counters from the interface group of the MIB-II are not implemented correctly for the serial port.
7. The `IPNetToMediaTable` and the `atTable` of MIB-II cannot be modified via SNMP. The enterprise specific MIB variables `lcmastrx` and `lcbcastrx` from the Sonic Stats group are not implemented.

Introduction

Introduction

This manual explains how to prepare a cable TV network for installation of the ChannelWorks Bridge. You use the manual with the Windows[®] based LANcity[®] Management Utility (LCM) to configure ChannelWorks operating parameters. The utility is similar to the one shipped with the unit; but, it includes additional functionality to not only view the bridge's parameters but also modify them as well.

This chapter covers the following topics:

- Tasks that need to be completed prior to beginning installation
- The ChannelWorks Bridge physical description
- Location and description of the ChannelWorks Bridge diagnostic and status LEDs
- Location and description of the ChannelWorks Bridge input/output connections
- Required tools and equipment

Installation Tools and Equipment Required

When installing the ChannelWorks Bridge on a cable TV network, a significant portion of the installation process involves testing the cable's forward and return frequency signal levels. The following sections describe the required tools and test equipment and their uses.

Tools You Need

There are no special tools required to install the ChannelWorks Bridge. The tool kit should include:

- 7/16-in open end wrench
- A Phillips head screwdriver
- A pair of pliers
- Tweaking tool (Alignment tool)

Installation and Verification Equipment You Need

You need the following equipment during initial system set up and installation:

- A signal generator and a system analysis meter (Wavetek 450D, for example)

This device is used to transmit an RF carrier signal in the provided channel of the cable TV network, measure the signal level, and verify the operating frequency.

- Spectrum analyzer

Instruments such as the spectrum analyzer may be used but the procedure to verify signal levels and operating frequencies may differ slightly.

- PC based LCM software
- An IBM or compatible personal computer (PC) running Windows 3.1, with an available serial port and a terminal emulator application.

The PC is used to interface with the ChannelWorks Bridge serial port, thereby allowing you to configure and load the ChannelWorks Bridge operating parameters.

Note: Some PCs have only one serial port. This port is normally used to attach a mouse or pointing device. To communicate with the ChannelWorks Bridge using the LCM you must make the connection via a serial port.

Additional Installation Equipment You May Need

You should have the following additional installation equipment within easy access:

- Flash light
- Power extension cords/strips
- Multimeter (Ohm meter/volt meter)
- 75-ohm attenuators (various values, that is, 3, 6, 10 dB)
- Splitters (various sizes)
- Filters (sub, mid, high split)
- Coaxial, Ethernet and serial cables (various lengths)
- Transceivers (10Base5)
- 10Base5 and 10Base2 Ethernet terminators
- 6-in dual and 6-in single stand-alone, passive cable TV (coaxial) cable plants
- Packing tape

Physical Description

Referring to Figure 1-1, take a moment to examine the ChannelWorks Bridge. The key items on the bridge are:

- Three Ethernet ports, (BNC for ThinWire, AUI for thickwire and RJ-45 8-Pin modular jack for Unshielded Twisted Pair)
- Serial port, RS-232
- Cable TV transmit port and cable TV receive port RF connectors
- Power receptacle
- AC On/Off switch

Input/Output Connections

The following sections describe the ChannelWorks Bridge input/output connections in detail (refer to Figure 1-1).

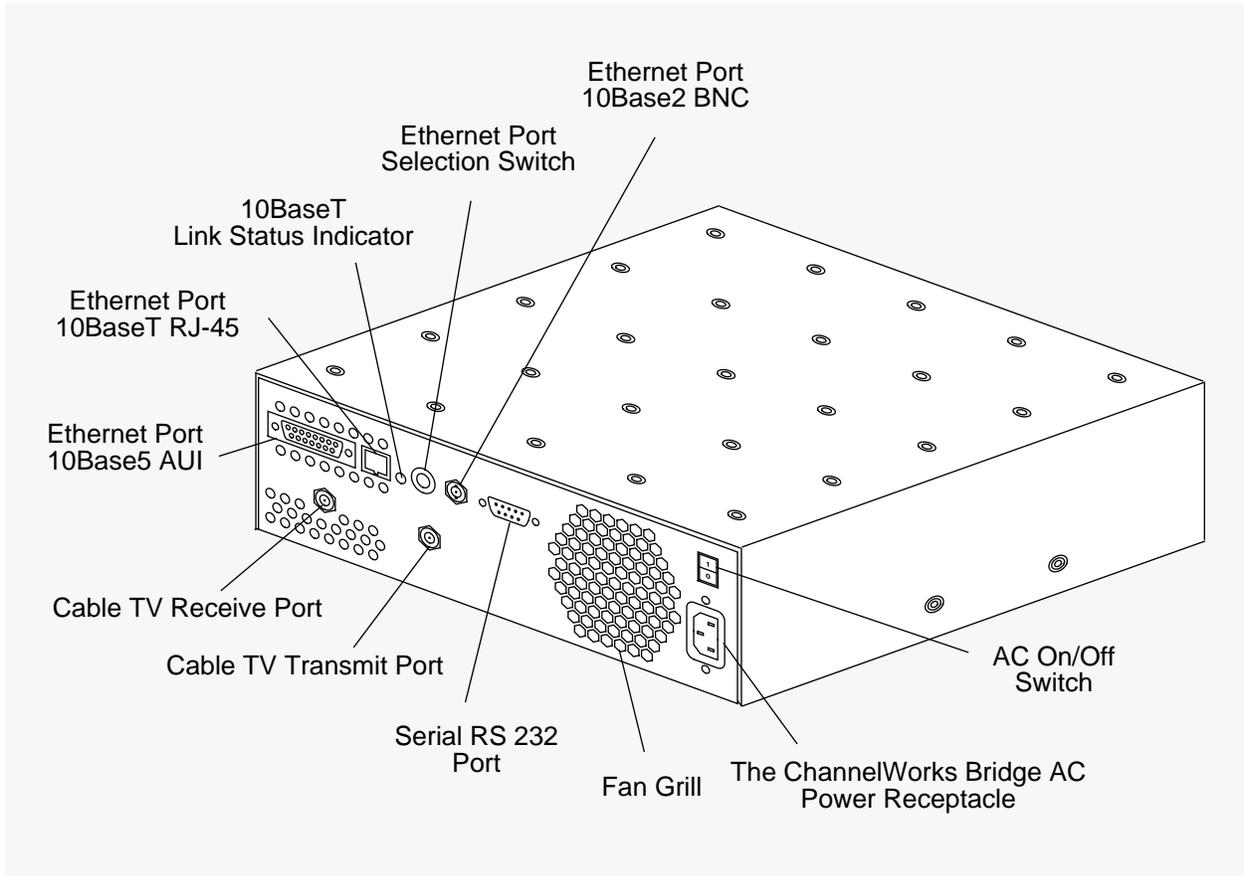
Ethernet Ports

The ChannelWorks Bridge supports the 10Base5 (thickwire), 10Base2 (ThinWire) and 10BaseT (unshielded twisted-pair) versions of the IEEE 802.3 specification.

The ChannelWorks Bridge uses the following standard Ethernet interface connectors:

- A 15-pin D-subminiature connector provides the standard interface for 802.3/Ethernet 10Base5.
- A BNC coaxial connector provides the standard interface for 802.3/Ethernet 10Base2.
- An RJ-45 connector provides the standard interface for 802.3 10BaseT.

Figure 1-1 Input/Output Connections



Ethernet Port Selection Switch

The Ethernet Port Selection Switch is located on the back panel between the Ethernet RJ-45 and BNC Ports. When the Ethernet Port Selection Switch is pushed in, the ChannelWorks Bridge can physically connect to an Ethernet network using its BNC Port. When the Ethernet Port Selection Switch is in the Out position, the ChannelWorks Bridge can physically connect to an Ethernet network using either its RJ-45 Port or its AUI Port.



Caution - You risk damaging the ChannelWorks Bridge and causing network problems if you attempt to connect Ethernet networks to both AUI (10Base5) and RJ-45 (10BaseT) Ports at the same time.



Achtung - Wenn Sie gleichzeitig 10base5- und 10baseT-Netzwerkschnittstellen an die ChannelWorks-Brücke anschließen, besteht die Gefahr, daß Sie diese beschädigen und Probleme in ihrem Netzwerk verursachen..



Attention - Vous risquez d'endommager ChannelWorks Bridge et de causer des perturbations sur le réseau si vous essayez de connecter simultanément les interfaces réseau 10base5 et 10baseT à ChannelWorks Bridge.



Aviso - Se pueden ocasionar daños al ChannelWorks Bridge y causar problemas en la red, si se intenta conectar simultáneamente los interfaces de red 10base5 y 10baseT a ChannelWorks Bridge.

Cable TV Ports

Two type F coaxial connectors provide the bridge's interface to the cable TV network. Figure 1-1 shows the location of the F connectors. The bridge's port labeled Cable TV Receive Port connects to the cable TV network's forward channel. The bridge's port labeled Cable TV Transmit Port connects to the cable TV network's return channel.

Serial Port

The ChannelWorks Bridge serial port interface is used for configuring the bridge's operating parameters using a personal computer and performing out of band network management

The serial port connects the bridge to a PC in order to run the LCM. A nine-pin D-sub-miniature connector provides the interface to the PC. Refer to Chapter 3 and Appendix A of the *ChannelWorks Network Installer's Guide* for more information on how to connect the ChannelWorks Bridge serial port to a PC.

The ChannelWorks Bridge Identifying Symbols

Figure 1-2 provides descriptions of the graphic symbols denoting The ChannelWorks Bridge interface ports, selection switch, and LEDs.

The following paragraphs describe the diagnostic and status LEDs of the bridge. All LEDs are located on the front panel except for the 10BaseT Link Status LED. This LED is located on the rear panel. Refer to Figure 1-2 for the locations of each LED.

10BaseT Link Status LED - Color Green

This LED is a status indicator located on the rear panel between the 10BaseT port and the Ethernet Port Selection Switch. When this LED is lit, it indicates the 10BaseT link is active.

Power On LED - Color Green

This LED is the main power indicator. When lit, this LED indicates there is DC power being supplied to the ChannelWorks Bridge. When off, this LED indicates the AC power has been removed from the ChannelWorks Bridge or the AC power has failed.

Ethernet Transmit LED - Color Green

When flashing or continuously lit, this LED indicates the ChannelWorks Bridge is actively transmitting data on the Ethernet media selected.

Ethernet Receive LED - Color Green

When flashing or continuously lit, this LED indicates the ChannelWorks Bridge is actively receiving data over the Ethernet media selected.

Broadband Transmit LED - Color Green

When flashing or continuously lit, this LED indicates the ChannelWorks Bridge is actively transmitting data over the cable TV broadband media.

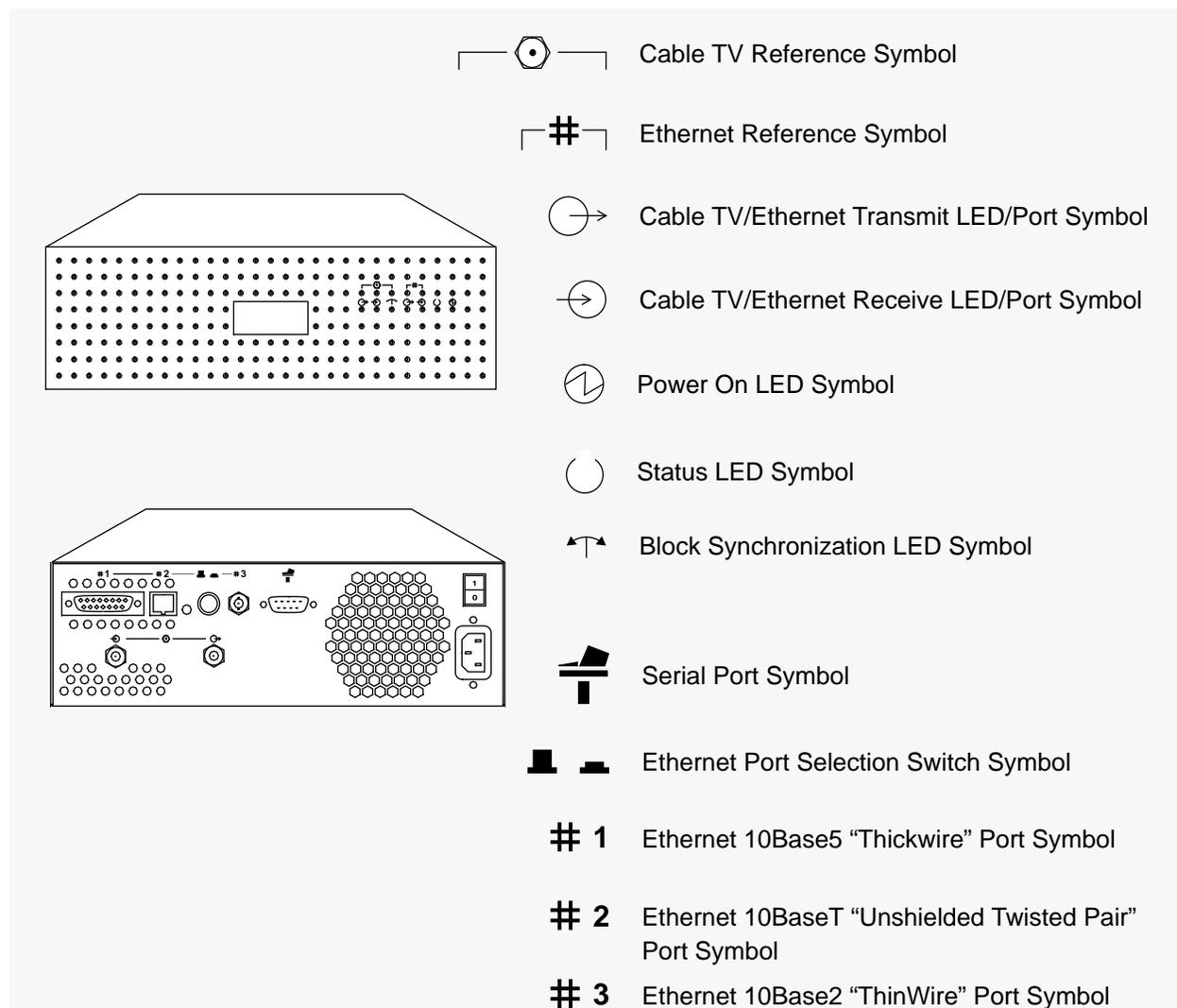
Broadband Receive LED - Color Green 

When flashing or continuously lit, this LED indicates the ChannelWorks Bridge is actively receiving data over the cable TV broadband media.

Status LED - Color Green 

When flashing slowly this LED indicates the ChannelWorks Bridge diagnostics passed and the unit is ready to receive its operating parameters or boot operational software. When this LED flashes rapidly it indicates the ChannelWorks Bridge self diagnostics passed and the operational software is running.

Figure 1-2 Identifying Symbols



Block Sync LED - Color Green ▲↑▲

This LED is a cable TV broadband network status indicator. Its primary purpose is to display the status of the cable TV network after power up. When continuously lit, this LED indicates the ChannelWorks Bridge has established block synchronization and the cable TV broadband link is active.

Specifications

The following sections cover specifications for the ChannelWorks Bridge, TransMaster and cable TV network.

Dimensions and Weight

ChannelWorks Bridge

The physical dimensions and weight of the ChannelWorks Bridge are provided below.

Height	3.47-in
Width	11.5-in
Depth	11.5-in
Rear Clearance	0.7-in
Weight	12-lbs

TransMaster

The physical dimensions of the TransMaster are provided below:

Height	1.75-in
Width	17.5-in
Depth	8-in
Weight	7.5-lbs

Power Requirements

ChannelWorks Bridge

The power requirements of the ChannelWorks Bridge are provided below:

100 - 120 Vac single phase, 3 wire (Domestic Standard)
0.7 A
220 - 240 Vac single phase, 3 wire (International Standard)
0.45 A
Frequency: 50 - 60 Hz

TransMaster

The power requirements of the TransMaster are provided below:

115 Vac
15 Watts
Frequency: 60 Hz

Normal Operating Environment

ChannelWorks Bridge

The normal operating environment of the ChannelWorks Bridge is provided below:

Operating Temperature: 10 to +40° Centigrade.
Storage Temperature: -40 to +66° Centigrade.
Humidity: 10% to 95%, noncondensing

TransMaster

The normal operating environment of the TransMaster is provided below:

Operating Temperature: 10 to +40° Centigrade.
Humidity: 20% to 80%, noncondensing

RF Electrical Specifications

ChannelWorks Bridge

The RF Electrical Specifications of the ChannelWorks Bridge are provided below:

Data Rate	10 Mb/s
Modulation	Quadrature Phase Shift Keying
Spectral Efficiency	1.67 bits/Hz
Transmitter	
Minimum Frequency Range	10 to 174 MHz
Frequency Stability	±15 ppm
Bandwidth	6 MHz
Power Output	+54 dBmV ±3 dB over min frequency range
Carrier On/Off Ratio	67 dB or better
Spurious Rejection	-40 dBc (on channel) +10 dBc (off channel)

Spurious Output	-45 dBc
Return Loss (TX Port)	14 dB
Receiver	
Minimum Frequency Range	54 to 550 MHz
Receive Level	-5 to +15 dBmV
BER @ 25 dB C/N	<1 in 10 ⁹
Return Loss (RX Port)	10 dB

TransMaster

Set-up and installation procedures for the translator are located in Chapter 3, “Setting Up the Headend Translator.” The following list contains the RF electrical specifications for the TransMaster single channel translator.

Input Frequency Range	8.75 to 550 MHz
Output Frequency Range	51 to 550 MHz
Frequency Step	250 KHz
Frequency Stability/Accuracy	±750 Hz 0°C to 40°C
Gain	30 to 50 dB (adjustable)
Bandwidth	-3 dB @ >5.2 MHz
	-40 dB @ >7 MHz
Spurious Products	>60 dB below max output level

Cable TV Network Requirements

The following list contains the required specifications that a cable TV network must meet in order for the ChannelWorks Bridge to operate properly when connected.

Nominal Impedance	75 ohms
Return Path Outlet-to-Outlet Variation	≤6 dB
Amplitude Flatness	±1 dB
Group Delay	±10 nsec
Carrier to Hum Ratio	≥34 dB
Carrier to Noise Ratio	≥40 dB
Carrier to Second Order Beat	≥60 dB
Carrier to Third Order Beat	≥78 dB
Carrier to Adjacent Channel Interference	≥36 dB

Cable TV Network Overview

Introduction

This chapter covers the following topics:

- Network topologies the ChannelWorks Bridge can operate on
- Descriptions of cable TV network architectures and elements

Cable TV Network Topologies

The following sections briefly describe some of the most popular cable TV network topologies. The discussion is not intended to be a training course in cable TV technology. It is provided to prepare you for the different cable TV topologies you may encounter during installation of the ChannelWorks Bridge.

Typical Metropolitan Area Network Over Cable TV

The hardware, software and firmware that make up nodes in a ChannelWorks Bridge network topology include:

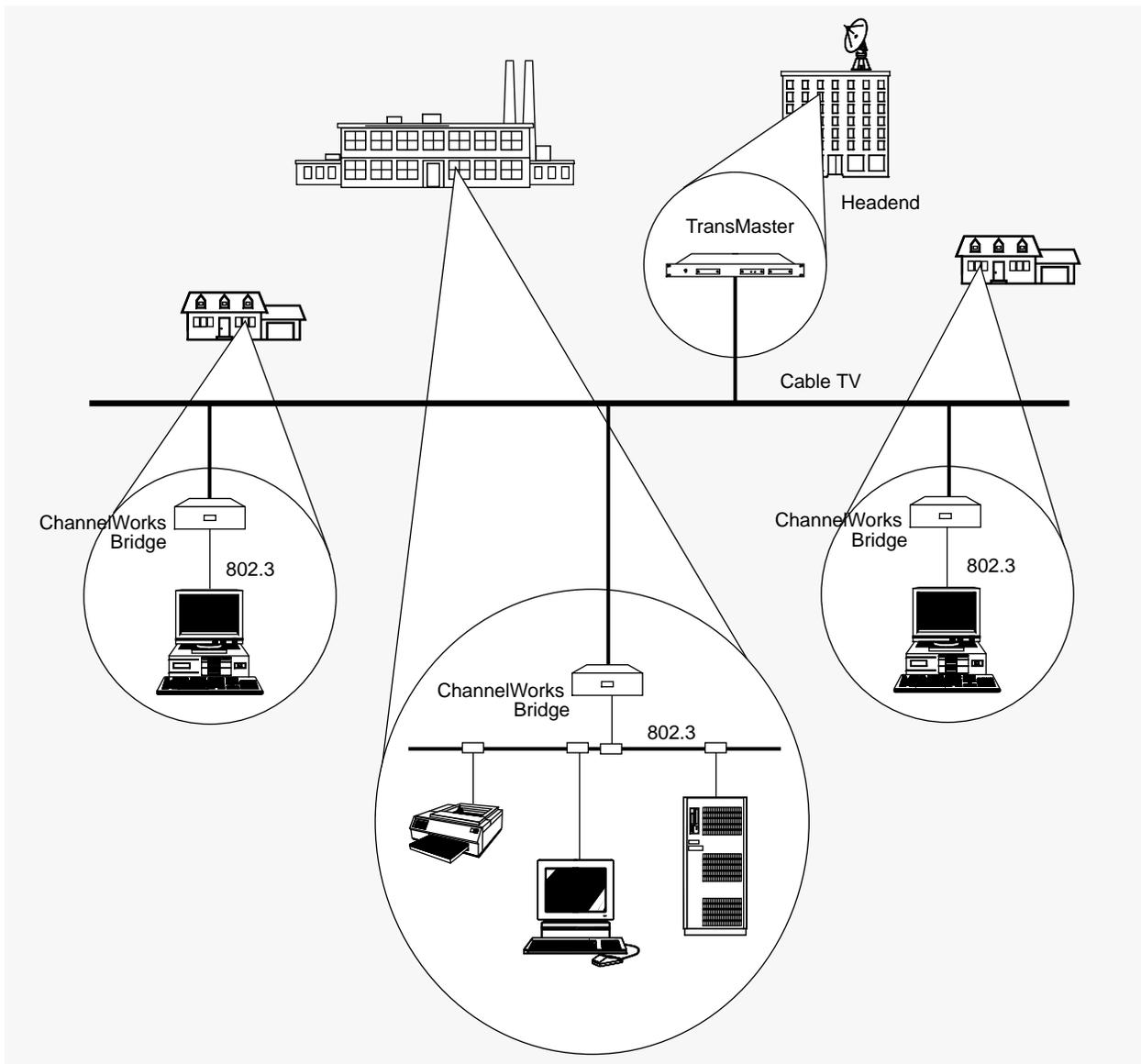
- A ChannelWorks Bridge running ChannelWorks Bridge Software
- A single channel, frequency agile translator (TransMaster) (required for single cable plants)

The ChannelWorks Bridge connects IEEE 802.3/Ethernet networks over a standard cable TV network. Refer to Figure 2-1. The cable TV network is shown as a simple backbone for clarity, but it would normally exist as a tree topology. Each bridge on the backbone can access the network independently via its unique access method protocol, UniLINK™.

UniLINK provides the benefit of both CSMA/CD and token passing on one network concurrently.

On a general cable operator's cable TV network, the ChannelWorks Bridge can provide a 10 Mb/s Ethernet data service in any one of 83 available standard 6 MHz forward channels (54 MHz to 550 MHz). And, the initial channel allocation can be changed by the installer or network manager at any time.

Figure 2-1 Typical Metropolitan Area Network Over Cable TV



Single Cable Plants

Single cable plants divide the flow of signals by frequencies allowing for bidirectional communications in a single cable. A block of frequencies are used for forward transmissions (going out from the headend) and a block of frequencies are used for return transmission (coming in to the headend). The cable TV equipment is located at the headend.

There are three common types of frequency allocation for single cable plants:

8. Sub-split (most cable TV systems)
Return frequencies = 5 to 30 MHz (4, 6 MHz channels)
Forward frequencies = 54 to 550 MHz (83, 6 MHz channels)
9. Mid-split (most popular for MAN environment)
Return frequencies = 5 to 116 MHz (18, 6 MHz channels)
Forward frequencies = 168 to 550 MHz (63, 6 MHz channels)
10. High-split (relatively new)
Return frequencies = 5 to 174 MHz (28, 6 MHz channels)
Forward frequencies = 232 to 550 MHz (53, 6 MHz channels)

The ChannelWorks Bridge can operate on any of the three types of frequency allocated single cable plants with the appropriate diplex filter attached.

Dual Cable Plants

A dual cable plant is really one cable looped at the headend. The standard return and forward frequencies for dual cable plants are 40 to 450 MHz (68, 6 MHz channels).

A diplex filter is not required when connecting the ChannelWorks Bridge to a dual cable plant where the return and forward frequencies are the same.

Topologies

The topology of the cable TV network describes the physical layout of the cabling running to nodes or stations on the network. Popular network topologies are described as follows:

- Tree — Resembles a tree. The root would be the headend. The trunk would be the main cable. And the branches would be the feeder cables off of the main cable (trunk).
- Star — In the star topology, all communications must pass through the central controller for routing to the receiving stations. This topology communicates as though it is point to point connectivity.

- Bus — All nodes are connected to a single length of cable. All transmissions are broadcasted to all stations on the network.
- Hybrid — A hybrid network topology is a mix of topologies, that is, “the ring of stars.”

The cable TV broadband topology is a tree topology that can act like a ring, bus, or star.

Preparing the Cable TV Network

Introduction

This chapter covers the following topics:

- Installing and setting the translator's forward and return frequency switches
- Verifying the translator's output signal level
- Attaching the translator to the cable TV network
- Performing cable TV network verification tests

Setting Up The Headend Translator

The translator that this chapter describes is the single channel, frequency agile TransMaster, shown in Figure 3-1. The TransMaster receives inbound transmissions and performs a frequency shift to outbound transmissions. The TransMaster consists of an input-to-intermediate frequency (i.f.) converter and an i.f.-to-output converter. TransMaster has Surface Acoustic Wave (SAW) filtering with 5.2 MHz i.f. bandwidth, suitable for most translator applications; and manual gain control.

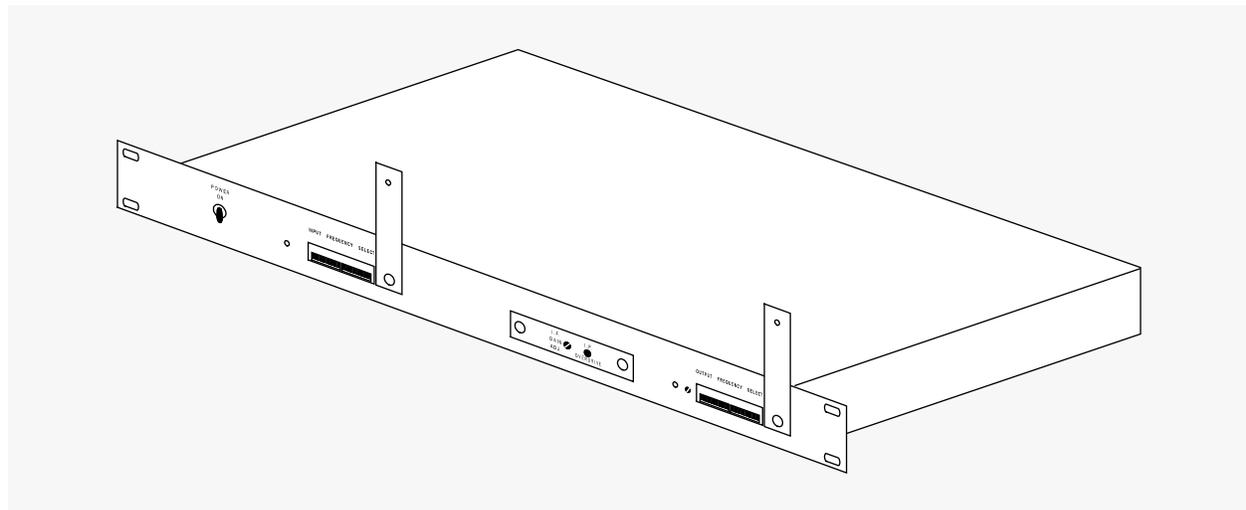
During verification of the cable TV network's signal levels, you must perform the procedures at the final operating frequencies.

Working with the cable TV operator, select a location for the TransMaster and install it. **Do not connect it to the cable TV network.**

Verifying And Setting Up Test Equipment

Chapter 1 provides a list of required tools and equipment to install the ChannelWorks Bridge. The equipment should be calibrated according to the manufacturer's instructions.

Figure 3-1 TransMaster, Single Channel, Frequency Agile Translator



Setting The TransMaster's Forward And Return Frequencies

Forward (Output) Channel Frequency Selection

Front panel DIP switches control the selection of channel frequency. You use the DIP switches labeled Output Frequency Select to set the forward channel frequency. Use the TransMaster Frequency Setting chart in Appendix A to set DIP switch assignments for the desired operating frequency. For the ChannelWorks Bridge, channel center frequency is the normal operating position.

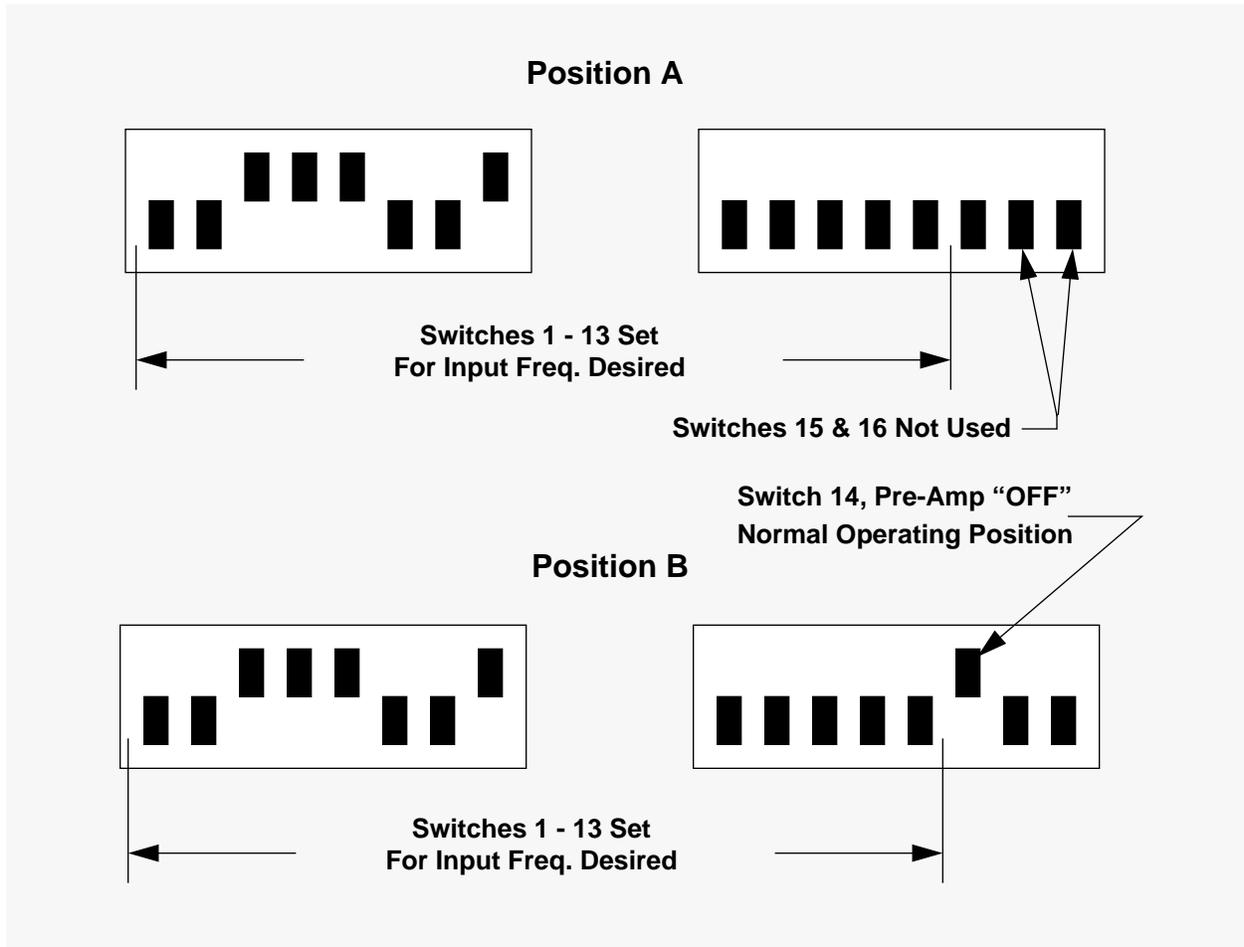
Return (Input) Channel Frequency Selection

The input section of the input tuner is selectable with regard to pre-tuner gain. Position A in Figure 3-2 is for input signals below 0 dBmV. Position B of Figure 3-2 is for input signals above 0 dBmV to 10 dBmV. The normal operating position will be B. Switches 14, 15 and 16 must be set as shown in Figure 3-2. Refer to "Adjusting The TransMaster Gain" for more information on using the Input Frequency Select DIP switches.

You use the DIP switches labeled Input Frequency Select to set the return channel frequency. The TransMaster Frequency Switch Setting chart in Appendix A indicates the DIP switch settings for all return channels. The first 13 switches (from left to right in Figure 3-2) are for frequency selection.

After you set the TransMaster's forward and return frequencies, turn the TransMaster's power on.

Figure 3-2 Input Frequency Select Switches Operating Positions



Verifying The TransMaster's Output Signal Level

Verify the TransMaster's output signal level and the forward and return center frequencies by performing the following procedure:

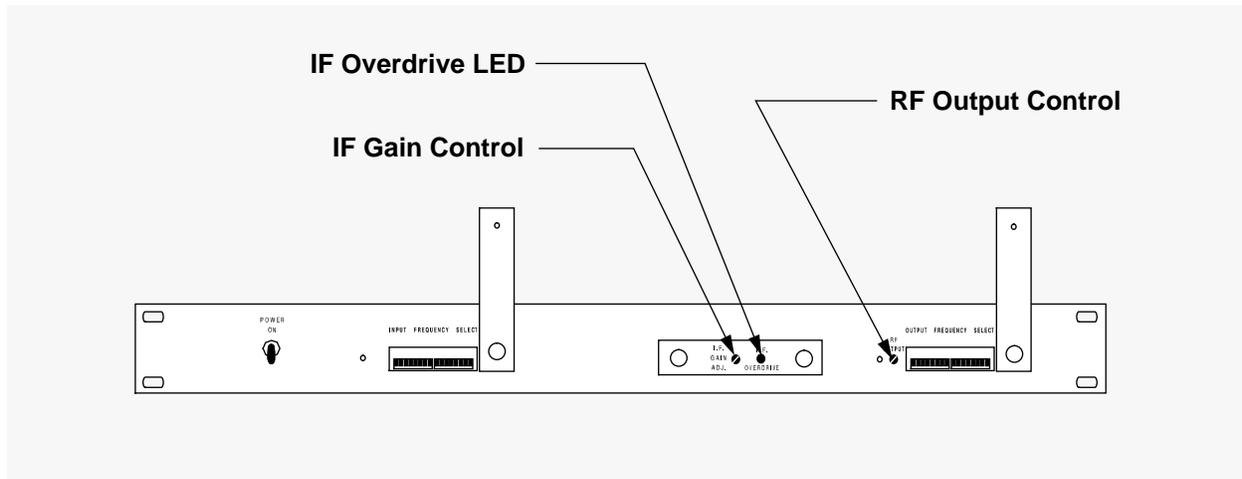
1. Using an RF Combination Meter or similar combination signal generator/RF signal level meter, set the RF Combination Meter's RF OUT frequency to the TransMaster's input center frequency.
Use a 50 dB attenuator to allow the RF Combination Meter to generate a +5 dBmV signal.
2. With the RF Combination Meter's RF Switch off, attach a test cable from the RF Combination Meter's RF OUT port to the TransMaster's RF IN connector.
This simulates a cable TV network's return signal at the required level.
3. Set the RF Combination Meter's RF IN frequency for the same frequency as was selected for the TransMaster's RF Output.
4. Attach another test cable from the RF Combination Meter's RF IN port to the TransMaster's RF OUT connector. This simulates a cable TV network's forward signal at the required level.
5. Turn the RF Combination Meter's RF Switch to ON.
The RF Combination Meter should read between +35 and +55 dBmV. You may have to adjust the meter's attenuator for a meter reading nearest the center of the scale.
6. Record the reading.

Adjusting The TransMaster Gain

Once you know the input and output levels of the TransMaster, you can set the gain. Perform the following procedure to set up and align the TransMaster:

1. With the TransMaster's input and output frequencies set, use a small flat screwdriver to rotate the IF Gain and RF Output controls (front panel, see Figure 3-3) full clockwise.
Ensure that the Input Frequency Select DIP switches are set correctly for the required input (return) channel. Refer to the "Return (Input) Channel Frequency Selection" section.
2. Using the same setup as in the previous section ("Verifying the TransMaster's Output Signal Level"), inject a Continuous Wave (CW) signal in the TransMaster's RF IN port at the required input level.
Adjust the IF Gain control fully counterclockwise. Adjust the RF Gain control fully counterclockwise..

Figure 3-3 IF Gain And RF Output Controls



3. Rotate the IF Gain control clockwise until the red overload indicator turns on. Back off the control until the indicator light goes off. This optimizes the IF gain setting of the TransMaster.
4. If the output level of the TransMaster needs to be increased, adjust the RF Output level control clockwise until the desired level is obtained.

The downward adjustment range is 10 dB for the RF Output control. If additional gain reduction is required, add external attenuators to the TransMaster's RF Output port.

5. Connect the TransMaster to the cable TV network.

In most cases, a cable will run from the return splitter to the TransMaster's RF Input and another cable will run from the TransMaster's RF Output to the forward combiner.

Once the TransMaster is on the cable TV network, you must observe the forward spectrum of the system on a spectrum analyzer. Compare the adjacent channels' video carriers and a signal (set at the level you have been testing with) injected in your data channel using the RF Combination Meter.

Set the gain (RF output level) of the TransMaster so that the RF Combination Meter's signal level is approximately 3 dB below (lower than) the video.

Cable TV Network Verification Tests

For each ChannelWorks Bridge to operate properly on a cable TV network, the network must meet the requirements listed in Chapter 2. This section provides procedures to determine the transmit and receive levels of a cable TV network.

The cable TV network verification procedures are:

- “Verifying the Selected Cable TV Drop’s Center Frequency Receive Level” — This procedure allows you to determine the forward frequency level at which the ChannelWorks Bridge will be receiving and adjust if necessary.
- “Verifying the Flatness of the Cable TV Network at the Selected Drop” — This procedure allows you to measure the variance in signal level between a low and a high frequency.
- “Verifying the Cable TV Network’s Outlet to Outlet Variation”— This procedure allows you to calculate the forward signal level differences of frequencies being used.

Note: Before performing any of the cable TV network verification tests in this chapter, the translator must be installed at the headend. Refer to the “Setting Up the Headend Translator” section for installation procedures.

Verifying Selected Cable TV Drop's Center Frequency Receive Level

Chapter 1's "Cable TV Network Requirements" section listed the specifications of a properly maintained cable TV network. One of the specifications is in the category of "Output From Cable Plant (Forward, Modem Receive)."

You must adhere to the Nominal Receive Level Range of -5 dBmV to $+15$ dBmV for the ChannelWorks Bridge to operate properly. Referring to Figure 3-4, perform the following procedure to verify each cable TV drop's center frequency receive level.

1. Set the RF Combination Meter to a selected return frequency.

This frequency must be the final transmit frequency of the ChannelWorks Bridge.

2. Set the RF Combination Meter's output level to $+55$ dBmV.

This level simulates the ChannelWorks Bridge transmit level.

Note: Depending on the cable TV distribution system design, this transmit level of $+55$ dBmV may need to be "padded down" (reduced) to avoid over-driving the first amplifier in the return path. Verify the desired ChannelWorks Bridge transmit level with the cable TV operator to ensure establishing the optimum transmit level for both the cable TV network and the ChannelWorks Bridge.

3. With the RF switch in the OFF position, attach a test cable from the RF Combination Meter's RF OUTPUT to the low side of the diplex filter (the ChannelWorks Bridge TX or transmit).

Insert the signal at the ChannelWorks Bridge point of connection.

Note: Refer to the "Connecting To A Single-Cable, Cable TV Network" section in Chapter 4 of the *ChannelWorks Network Installer's Guide* for diplex filter installation information.

4. Set the RF Combination Meter to the selected forward frequency and adjust its attenuator to $+5$ and $+10$.

This frequency must be the final receive frequency of the ChannelWorks Bridge.

5. Connect a cable from the diplex filter's high side (the ChannelWorks Bridge RX or receive) to the RF Combination Meter's RF INPUT.

Receive the signal at the ChannelWorks Bridge point of connection.

6. Turn the RF Combination Meter's RF switch to ON.

You may have to adjust the RF Combination Meter's attenuator for a meter reading nearest the center of the scale.

7. Record the center frequency level and check against the specifications for nominal receive level.

Verifying The Flatness Of The Cable TV Network At The Selected Drop

Referring to Figure 3-4, perform the following procedure to verify the cable TV network's flatness at the selected drop.

1. Perform the center frequency receive level test.

Step the RF Combination Meter's transmit and receive frequency settings in 0.5 MHz increments toward both the low side and high side of the selected center frequency out to a maximum of ± 2.5 MHz from center frequency.

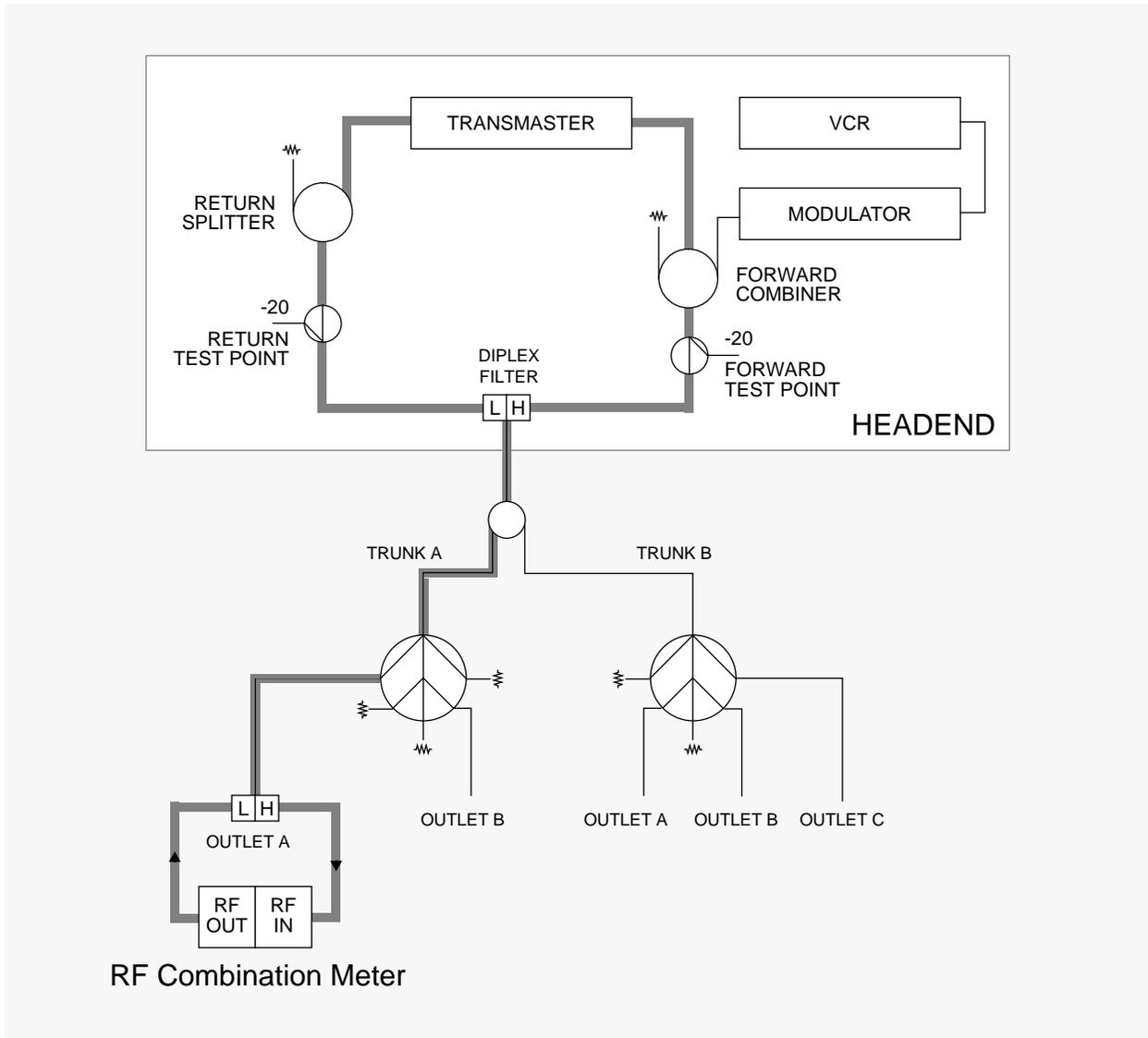
2. Record values.

Flatness (peak to valley) = maximum reading – minimum reading.

3. Check against specification for Flatness (± 1 dB).

Refer to the Cable TV Network Requirements in Chapter 1.

Figure 3-4 Cable TV Network Outlet Receive Level Verification



Verifying The Cable TV Network's Return Outlet To Outlet Variation

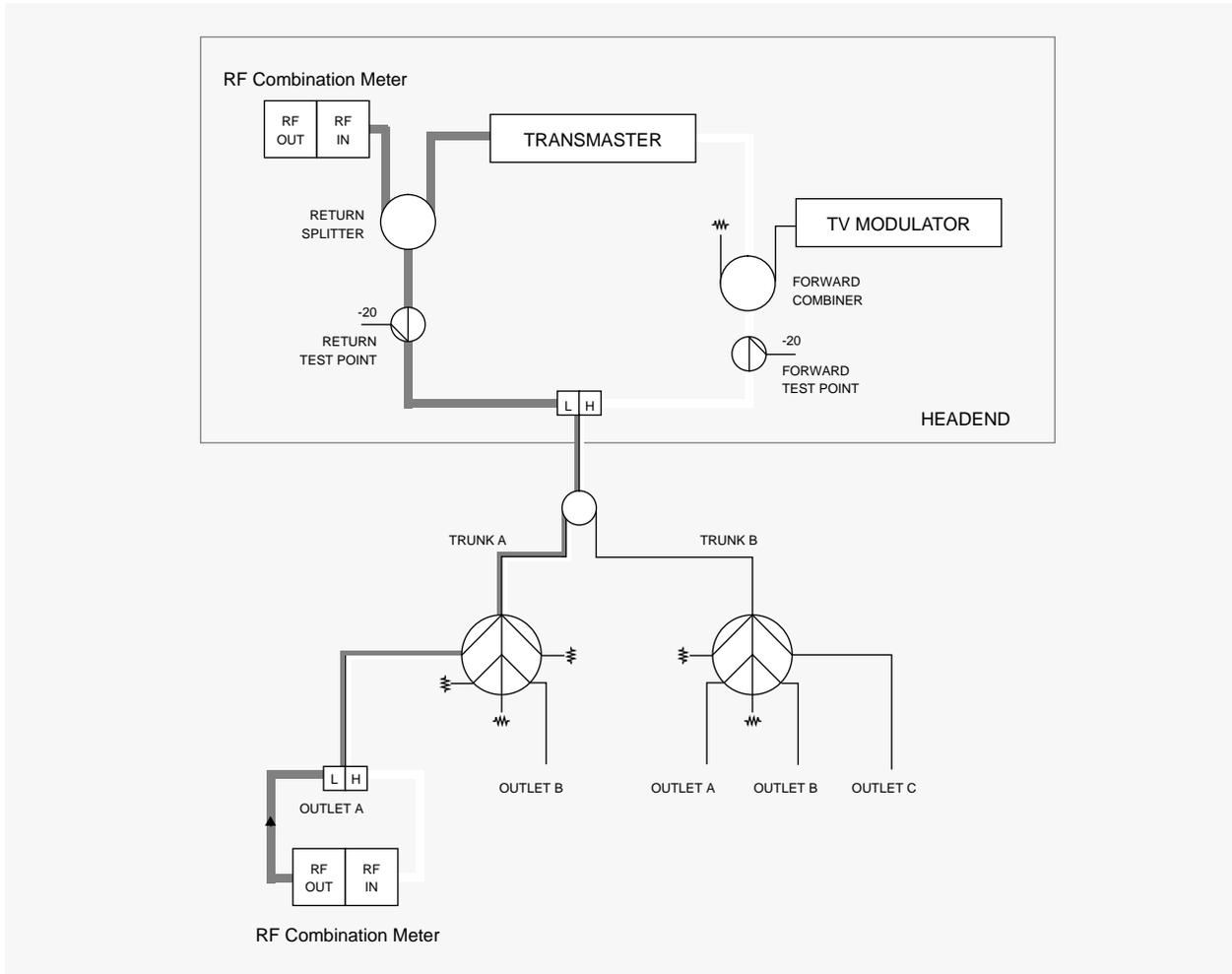
The Return Outlet to Outlet Variation is a target variation between signals transmitted at the network outlets as measured at the input to the TransMaster. This is a network-wide specification based on data taken at individual sites.

To measure the cable TV network's Return Outlet to Outlet Variation, use the system analysis meter and signal generator at the selected cable TV Drop's outlet in conjunction with another system analysis meter or RF Combination Meter located at the head-end and perform the following procedure. Refer to Figure 3-5. Perform the following to:

1. Record the Maximum Return Path Loss.
2. Record the Minimum Return Path Loss.
3. Calculate the Return Outlet to Outlet Variation:
Max Return Path Loss - Min Return Path Loss
4. Check the calculated Return Outlet to Outlet Variation against the specifications.

Refer to the Cable TV Network Requirements in Chapter 1. If the Return Outlet to Outlet Variation is not within specification (≤ 6 dB), take corrective action. You may have to attach external attenuators to the ChannelWorks Bridge if the situation cannot be corrected by adjustments to the cable plant.

Figure 3-5 Measuring The Return Path Loss Outlet To Outlet Variation



Configuring And Installing The ChannelWorks Bridge

Introduction

This chapter covers the following topics:

- Installing the LANcity[®] Management Utility (LCM) on a PC
- Setting up user accounts
- Physically installing the ChannelWorks Bridge
- Setting up the receive and transmit frequencies
- Starting up the ChannelWorks Bridge

After you have performed the procedures in this chapter, your ChannelWorks Bridge will allow devices attached to separate Ethernet networks to communicate with each other over your cable TV network.

This chapter does not describe how to physically install the ChannelWorks Bridge. Refer to the *ChannelWorks Network Installer's Guide*, Chapter 2 “Hardware Installation” for procedures to:

- Unpack the unit
- Identify the contents
- Verify the packing slip
- Find a location for the unit
- Physically perform any installation necessary (rack or wall-mounting)
- Verify physical attachment to the network

Installing The LANcity Management Utility On A PC

You use the LCM to access the bridge's NVRAM and verify or modify the bridge's parameters.

Perform the following procedure to install the LCM on your PC's hard drive:

1. Insert the LCM floppy in the PC's 3.5-in drive.
2. From the Window's Program Manager choose File, Run.
3. At the command line type in the letter of your PC's 3.5-in drive followed by

: \setuplcm.exe

The PC displays the LC Install Utility dialog box, as shown in Figure 4-1.

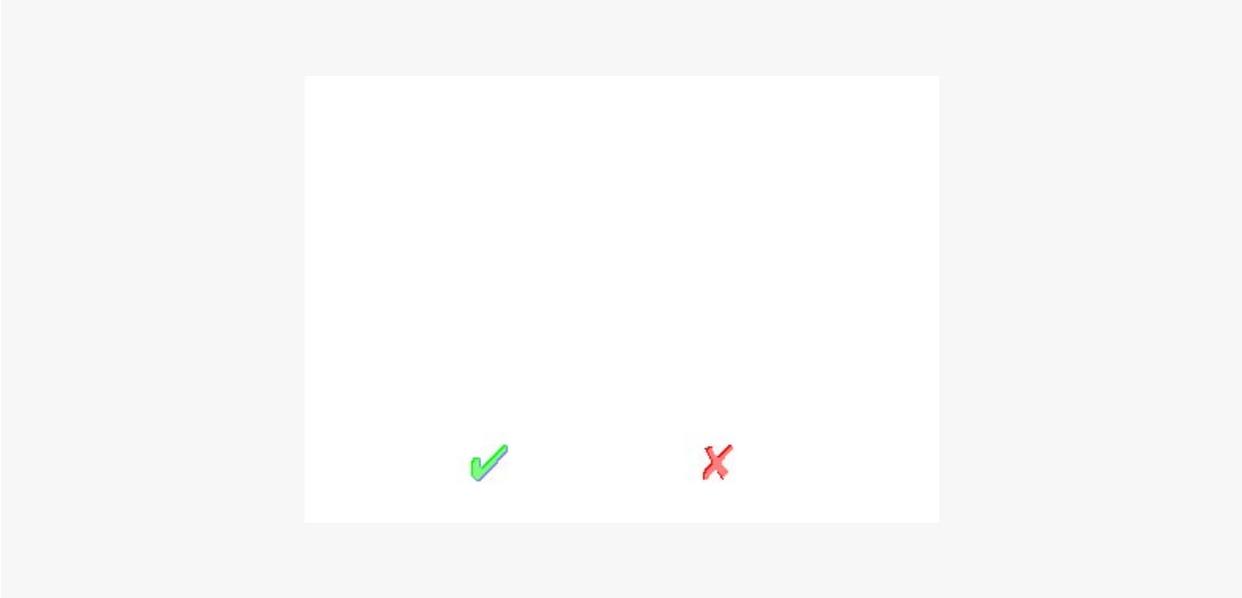
4. To install the utility in a directory other than the one in the utility's dialog box, change the default path and choose OK. The utility creates the directory chosen, copies the program files to the directory, and displays the LC Install Utility program group creation dialog box, as shown in Figure 4-2.
5. Click on OK. LC Install Utility creates the LCM Bridge Manager program group. window. The utility places the following icons in the LCM Bridge Manager window:
 - The LCM executable
 - A Readme file
 - The LCM Release Notes.

You are now ready to run the utility from Windows. Refer to the "Setting Up User Accounts" section to set up valid user names and passwords.

Figure 4-1 Directory Location Dialog Box



Figure 4-2 Create Program Group Dialog Box



Setting Up User Accounts

You use LCM to perform verification and modification of ChannelWorks Bridge operating parameters. To access LCM, you must have a user name, password and level stored in the utility's database.

Perform the following procedure to add a user. This procedure assumes that you have installed the utility on your PC's hard drive and you have opened the LCM Bridge Manager program group window. If you have not installed LCM on your PC's hard drive, refer to the "Installing The LANcity Management Utility On A PC" section.

1. Click on the LCM icon. The utility displays the LCM login window.
2. Type the initial Admin user name printed on the LCM floppy and press Tab.
3. Type the initial Admin user password printed on the LCM floppy and click on OK.

Note: The initial Admin user name and password provides only Admin Level access. Other LCM Utility functions can not be implemented using the initial Admin user name and password. To insure security, use the initial Admin user name and password to create a unique user name and password for yourself. Use the utility's Delete User function to remove the initial Admin user name and password.

4. Click on Admin. The utility displays the LCM Add User/Delete User pull down menu as shown in Figure 4-3.
5. Click on Add User from the Admin Pull Down menu.

The Utility displays the Add User entry window with a default User Name, User Password and User Level entered as shown in Figure 4-4.

6. Use the mouse or keyboard to highlight the User Name. Delete it using the DEL key or type in a new user name right over the highlighted user name.
7. Use the mouse or keyboard to highlight the User Password. Delete it using the DEL key or type in a new user password right over the highlighted one.
8. Click on the desired User Level, and click OK. The Utility displays the Add User to Database window.

Note: Refer to the "User Levels" section for a description of the Utility's access levels.

9. Click on Yes.

If there is a duplicate user name in the Utility's database, the Utility displays the User Status window indicating that there is a duplicate name and requests that you choose another name. Otherwise, the User Status window indicates that the new user was added successfully.

10. In either case, click on OK. The Utility returns you to the Main Menu.

Figure 4-3 Admin Pull Down Menu

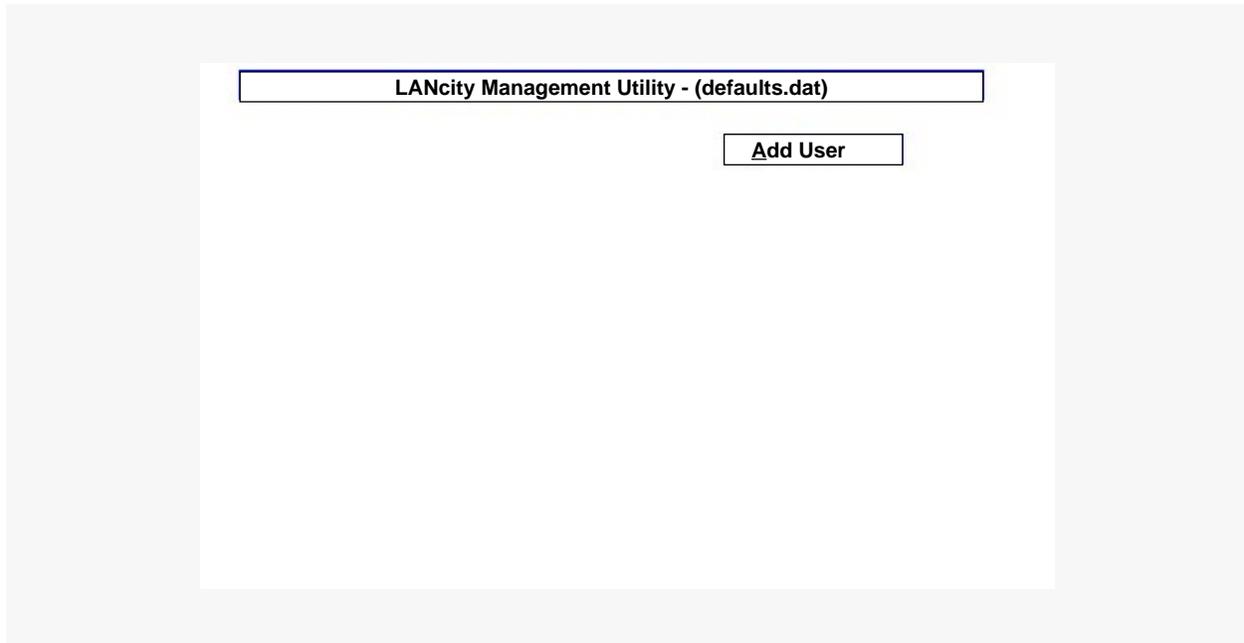
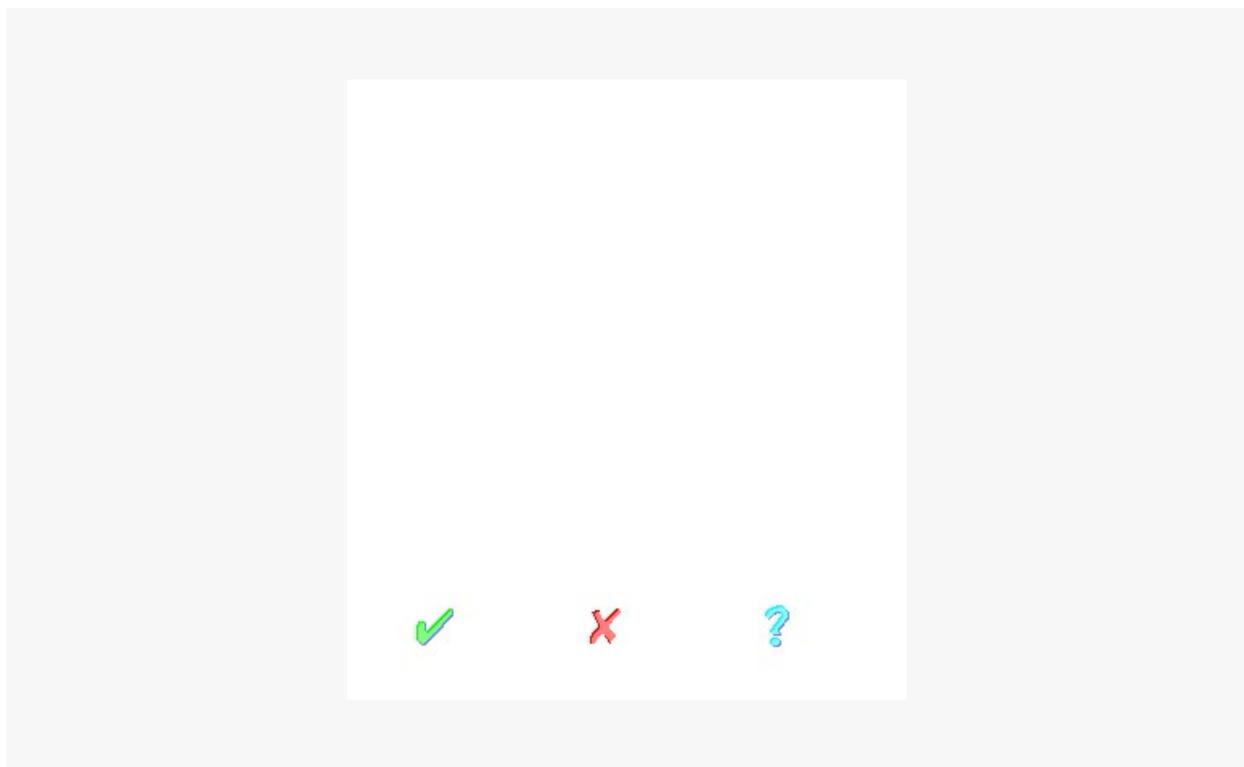


Figure 4-4 Add User Entry Window



User Levels

There are four levels of access for the LCM. The following is a description of the LCM access levels and ultimately the amount of access a user has to the bridge's operating parameters. LCM's levels one and two have the same access capability as the LANcity Subscriber Utility (LCS). Refer to the "User Levels" section of the *ChannelWorks Network Installer's Guide* for a description of User Levels One and Two. The descriptions of LCM's Level One and Level Two are repeated here for clarity purposes.

Level One

This level allows the user to:

- Read the bridge's NVRAM
- View the current operating parameters of the bridge
- Start the terminal emulator
- Choose and initialize the PC's serial port

Level Two

This level allows the user to perform all of Level One's functions and:

- Modify the following parameters from the Parameters pull down menu:
 - Bridge Control Group
 - Download Group
 - Dump Server Group
 - Filter Control Group
 - Network Management Control Group
 - System Group
 - Unique IP Addresses Group
- Load the above listed parameters from the individual group windows or from the Bridge Load Parameters window
- Open and save parameter files

Level Three

This level allows the user to perform all of Level One's and Two's functions and:

- Modify all of the bridge's operating parameters from the Parameters pull down menu
- Load all of the bridge's operating parameters from the individual group windows or from the Bridge Load Parameters window

Level Four

This level allows the user to add and delete users for levels of access described above.

Setting Up The ChannelWorks Bridge For Operation

Perform the following procedure to connect a PC to the ChannelWorks Bridge serial port: This procedure assumes that you have installed LCM on your PC. If you have not installed LCM on your PC, refer to the “Installing The LANcity Management Utility On A PC” section.

1. Plug the unit into its power outlet.

Note: Do not connect the network cables at this time and do not turn the ChannelWorks Bridge on yet.

2. Plug in the PC and attach the nine-pin null modem cable between the PC and the ChannelWorks Bridge.
3. Bring the PC up through its normal power sequence; start Windows.
4. Click on the LCM icon. The utility displays the LCM login window.
5. Type your user name and password and click OK. The utility displays the terminal emulator launch window.

Note: Refer to the “Setting Up A User Account” for the procedure to add a user with a valid password.

6. Click on Yes. The utility displays Microsoft Windows’ Terminal program.

Note: Microsoft Windows Terminal must be installed in your windows directory for this feature to work. Otherwise, you must start a terminal emulation program at this step.

7. Set the terminal emulator’s communications parameters to:
 - Connector: PC port from step 2 (COM1, COM2, etc.)
 - Baud Rate: 9600
 - Data Bits: 8
 - Stop Bits: 1
 - Parity: None

Note: Refer to the “Selecting The Communications Port” section of the *ChannelWorks Network Installer’s Guide* for directions to select your PC’s COM port from LCM.

8. Turn the ChannelWorks Bridge power on.

Note: When you turn the unit on, you should observe a delay of approximately 3 seconds in the power light coming on. If not, refer to Chapter 5. Figure 4-5 is an example of a terminal emulator as it displays the ChannelWorks Bridge power-on diagnostics.

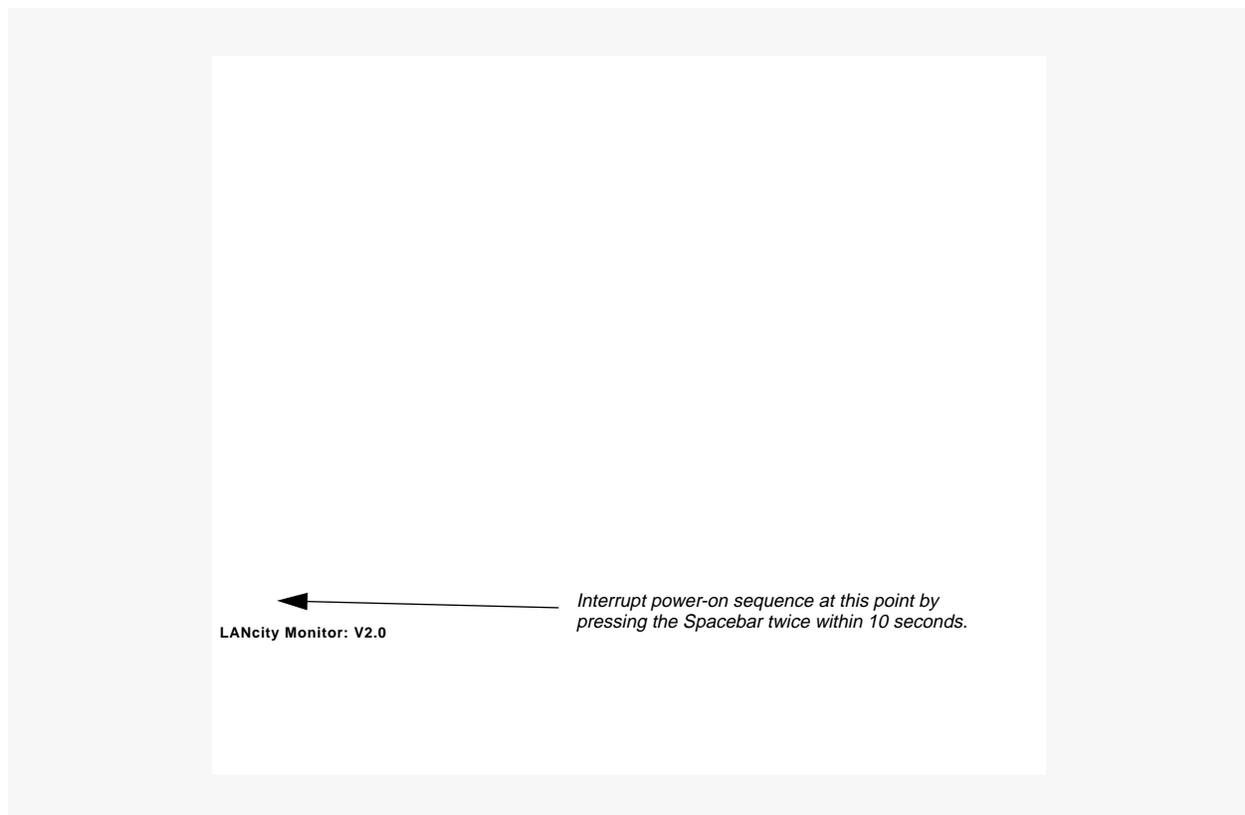
9. Verify that the ChannelWorks Bridge passes its “ASIC Interrupt and Loopback Test.” This is the last test of the ChannelWorks Bridge power-on diagnostics.

10. Press the Spacebar twice, within 10 seconds after the ChannelWorks Bridge power-on diagnostics passes the ASIC Interrupt and Loopback Test and displays three periods in the left margin.

This action prevents the ChannelWorks Bridge from performing its application boot at the end of its power up process. Approximately 30 seconds after you press the Spacebar, the ChannelWorks Bridge lists its memory sizes and displays its PROM monitor prompt of two greater than signs (>>). This allows access to the Channelworks Bridge NVRAM.

11. Close the terminal emulator application. This releases the PC's serial port for use by other programs such as the LCM. Use the LCM to perform the remaining procedures in this chapter.

Figure 4-5 ChannelWorks Bridge Power On Diagnostics



Verifying The ChannelWorks Bridge Parameters

Table 4-1 is a list of the ChannelWorks Bridge Common parameters. Common parameters must be set correctly and exactly the same in all bridges on the network in order for any of the bridges to boot and operate properly.

Verify that you have a list of the ChannelWorks Bridge parameters to check the parameter values against. Refer to “Appendix B” of the *ChannelWorks Network Installer’s Guide* for an example of the Pre-Installation Checklist.

Use the LCM to verify current parameters or modify the parameters that you can access. Refer to the “Verifying The ChannelWorks Bridge Parameters” section of the *ChannelWorks Network Installer’s Guide* for a description of all ChannelWorks Bridge operating parameters and information on verifying the ChannelWorks Bridge operating parameters.

If the common parameters of the ChannelWorks Bridge do not match your list, stop the installation procedure. If access to verify any of the parameters is denied to you, stop the installation procedure. If access to modify any of the Level Two or Level Three parameters is denied to you, stop the installation procedure.

The procedures following Table 4-1 explain how to modify the ChannelWorks Bridge operating parameters.

Table 4-1 The ChannelWorks Bridge Common Parameters

Control Group/Parameter Name	Usage	Example
Modem Control Group		
Modem Transmit Frequency	Frequency used to transmit data on cable TV network	25.25
Modem Receive Frequency	Frequency used to receive data from cable TV network	325.75
UniLINK Group		
Maximum Loop Delay	The round trip propagation delay	96

Modifying The ChannelWorks Bridge Operating Parameters

Apply the following procedures to all of the ChannelWorks Bridge operating parameters. The parameters selected for discussion here are parameters required to be set for initial installation of the ChannelWorks Bridge.

Modifying The Bridge Control Group Parameters

To modify Bridge Control Group parameters, perform the following procedure:

1. After performing the procedures in “Setting Up The ChannelWorks Bridge For Operation,” click the left mouse button on the Parameters menu selection of the LCM’s Main Menu.
2. Click on the Bridge Control Group selection. LCM displays the Bridge Control Group window. Figure 4-6 shows an example.
3. Click on the Pacer Echo Test button if you want this unit to participate in a “keep alive” check test when it is acting as the network pacer.
4. Click on the Non Pacer Echo Test button if you want this unit to participate in a “keep alive” check test when it is not acting as the network pacer.

Note: The ChannelWorks Bridge has a built in test function which exchanges data messages between bridges periodically as a “keep alive” check.

5. Highlight the number you want to change and type in the new IP Address Mask or IP Broadcast Address.
6. You have four options:
 - a. You can cancel by clicking on the cancel button and return to the Main Menu.
 - b. You can get help by clicking on the help button.
 - c. If you have other parameters you want to modify, you can click on OK.

LCM displays the Save Bridge Control Group window. Figure 4-7 is an example. Click on the YES button to save the parameters for loading at a later time.

- d. Or, load the modified Bridge Control Group parameters by clicking on LOAD in the Bridge Control Group window..

LCM displays the Load Bridge Control Group window, similar to the Save Bridge Control Group window. You can load the ChannelWorks Bridge NVRAM with the modified parameters and return to the Main Menu by clicking on the YES button.

Figure 4-6 Bridge Control Group Window

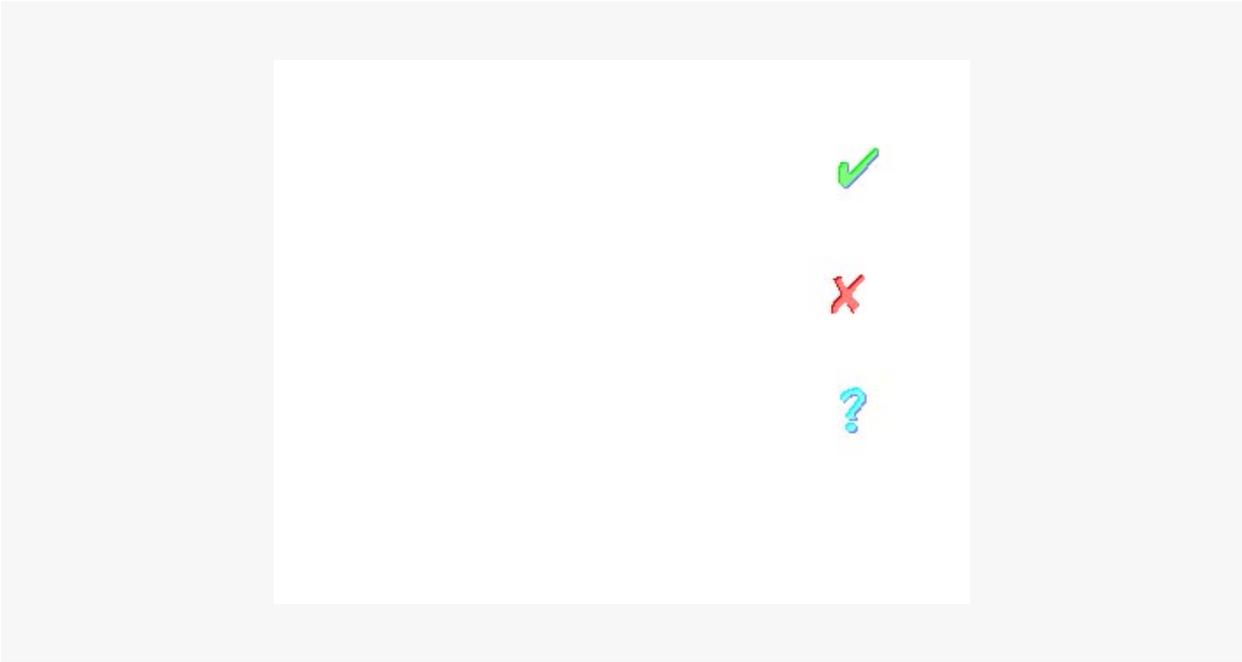


Figure 4-7 Save Bridge Control Group Window

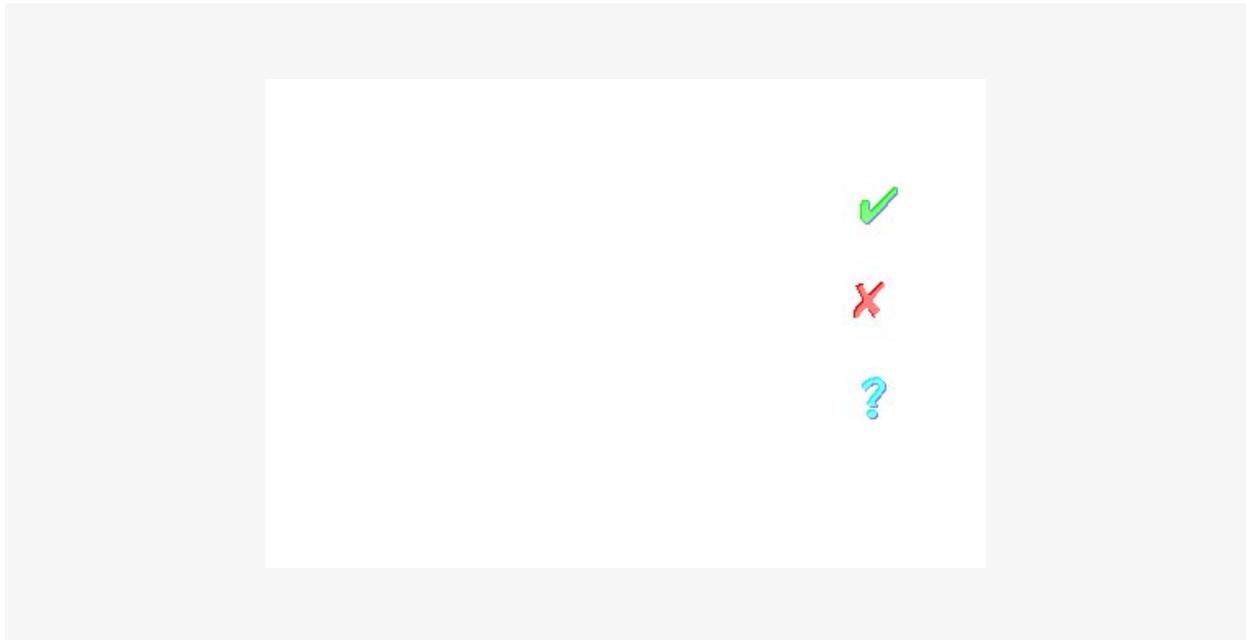


Modifying The Download Group Parameters

To modify the Download Group parameters, perform the following procedure:

1. Click on Parameters from LCM's Main Menu.
2. Click on the Download Group selection. LCM displays the Download Group window. Figure 4-8 shows an example.
3. Select and modify the desired parameters.
4. If you have other install parameters you want to modify, click on OK. LCM displays the Save Download Group window.
5. You can save the parameters for loading or you can click on Load from the previous window and LCM displays the Load Download Group window, allowing you to load the ChannelWorks Bridge NVRAM with the modified parameters.

Figure 4-8 Download Group Window

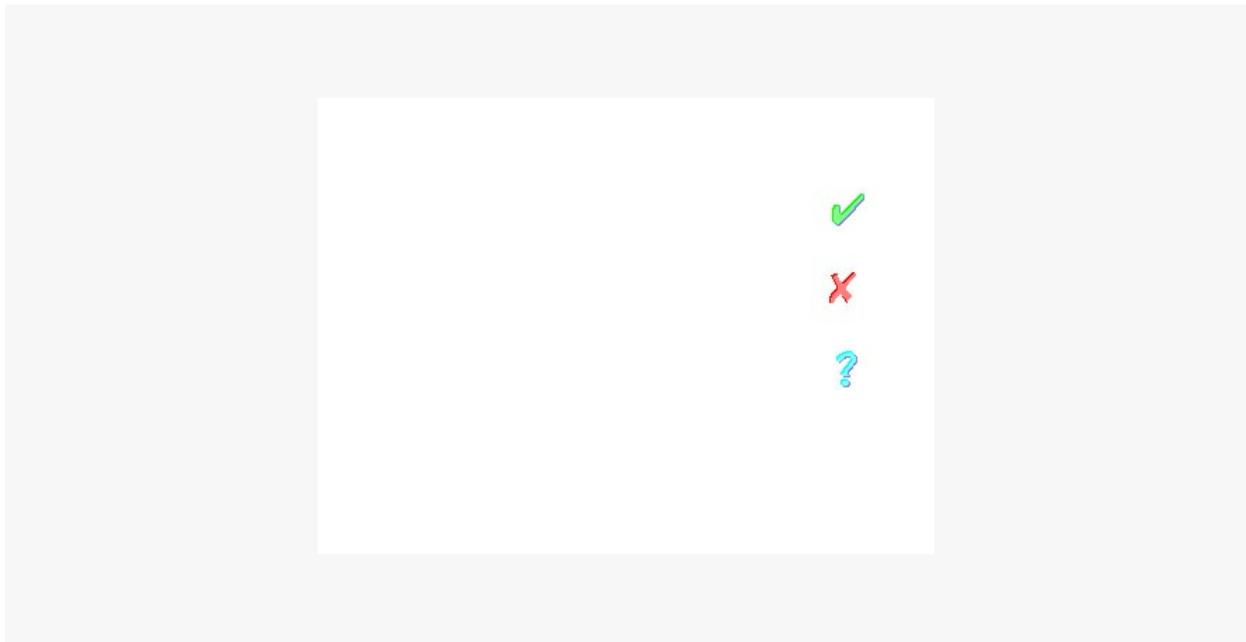


Modifying The Modem Control Group Parameters

To modify the Modem Control Group parameters, perform the following procedure:

1. Click on the Parameters from LCM's Main Menu.
2. Click on the Modem Control Group selection. LCM displays the Modem Control Group window. Figure 4-9 shows an example.
3. Select and modify the desired parameters.
4. If you have other install parameters you want to modify, click on OK. LCM displays the Save Modem Control Group window.
5. You can save the parameters for loading or you can click on Load from the previous window and LCM displays the Load Modem Control Group window, allowing you to load the ChannelWorks Bridge NVRAM with the modified parameters.

Figure 4-9 Modem Control Group Window

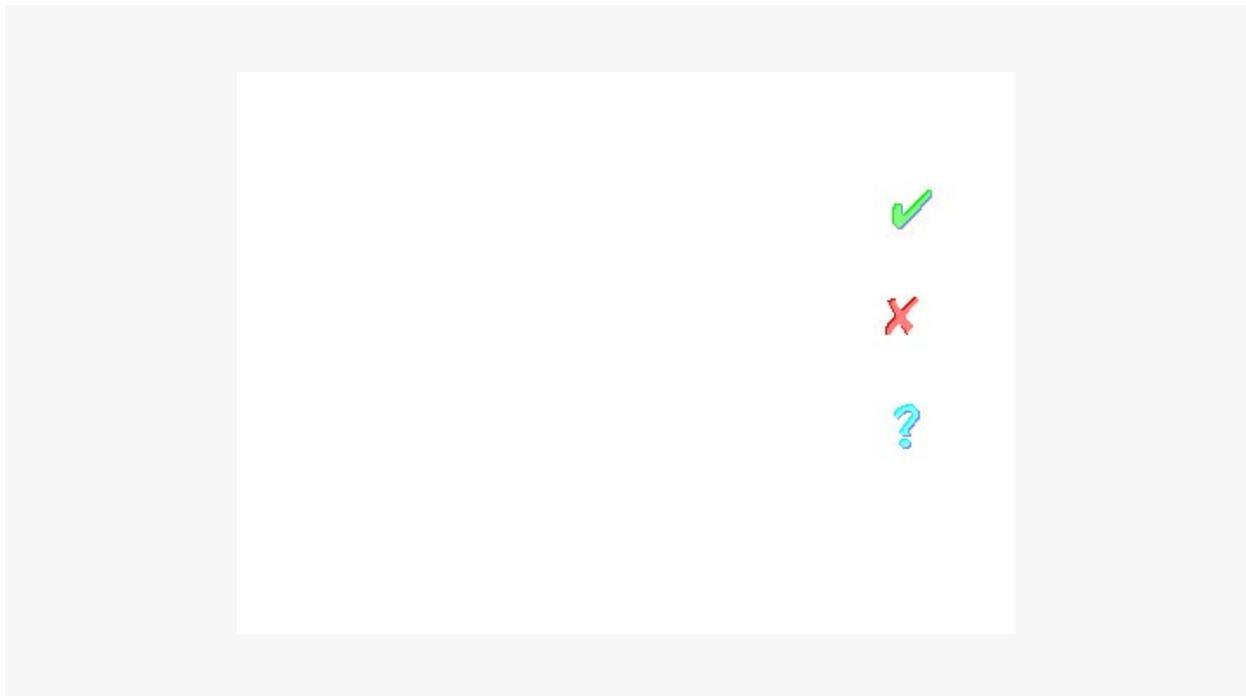


Modifying The System Group Parameters

To modify the System Group parameters, perform the following procedure:

1. Click on the Parameters from the LCM's Main Menu.
2. Click on the System Group selection. LCM displays the System Group window. Figure 4-10 shows an example.
3. Select and modify the desired parameters.
4. If you have other install parameters you want to modify, click on OK. LCM displays the Save System Group window.
5. You can save the parameters for loading or you can click on Load from the previous window and LCM displays the Load System Group window, allowing you to load the ChannelWorks Bridge NVRAM with the modified parameters.

Figure 4-10 System Group Window

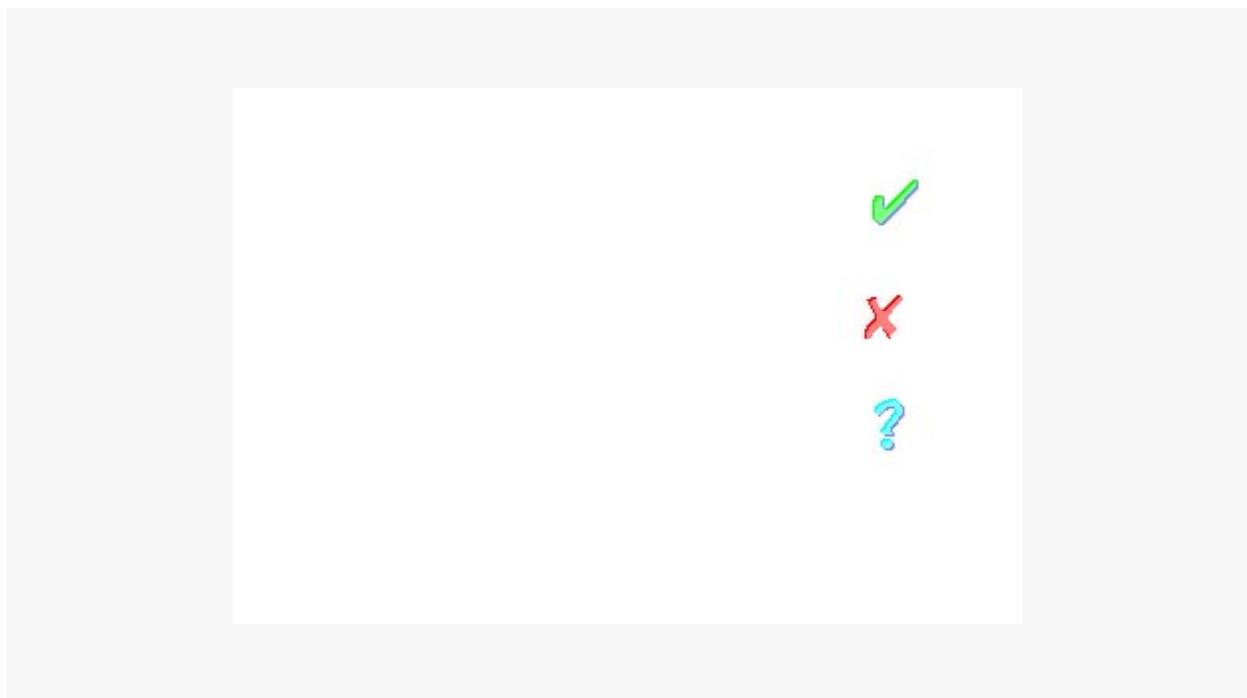


Modifying The Unique IP Addresses Parameters

To modify the Unique IP Addresses parameters, perform the following procedure:

1. Click on the Parameters from LCM's Main Menu.
2. Click on the Unique IP Addresses selection. LCM displays the Unique IP Addresses window. Figure 4-11 shows an example.
3. Select and modify the desired parameters.
4. If you have other install parameters you want to modify, click on OK. LCM displays the Save Unique IP Addresses window.
5. You can save the parameters for loading or you can click on Load from the previous window and LCM displays the Load Unique IP Addresses window, allowing you to load the ChannelWorks Bridge NVRAM with the modified parameters.

Figure 4-11 Unique IP Addresses Window

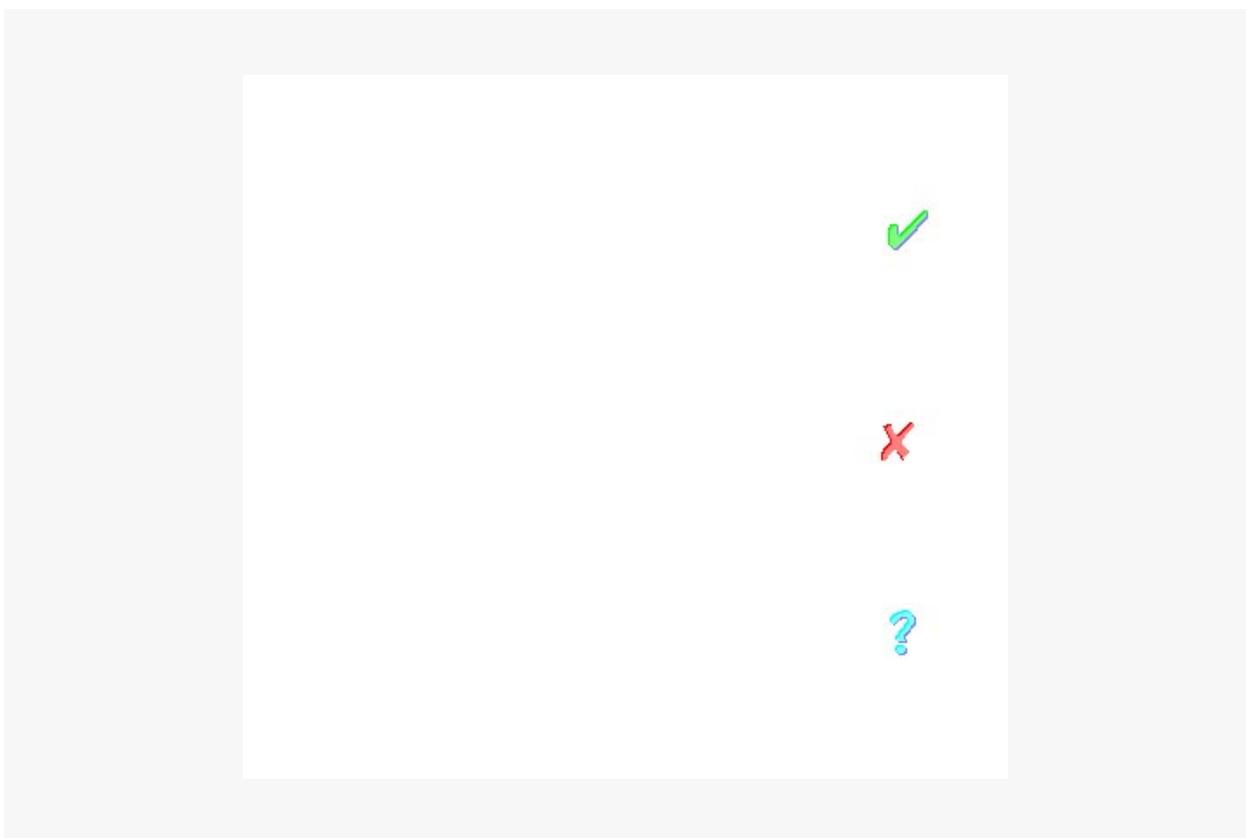


Loading Modified Select Parameter Groups

To load parameters that you have modified and saved for loading at a later time, perform the following procedure:

1. From LCM's Main Menu click the left mouse button on the Bridge menu selection.
2. Click on the Load Parameters selection. LCM displays the Bridge Load window. Figure 4-12 shows an example.
3. Click on the Select Groups box.
4. Click on the parameter selections that you modified and saved to load at this time.
5. Click on OK. LCM loads the ChannelWorks Bridge NVRAM with the selected parameters.
6. Close LCM's Main Menu and continue setting up the ChannelWorks Bridge for operation.

Figure 4-12 Bridge Load Window



Loading All Parameter Groups

To load all parameters, perform the following procedure:

1. From LCM's Main Menu click the left mouse button on the Bridge menu selection.
2. Click on the Load Parameters selection. LCM displays the Bridge Load window. Figure 4-12 shows an example.
3. Click on the Load All Groups box.
4. Click on OK. LCM loads the ChannelWorks Bridge NVRAM with all group parameters.
5. Close LCM's Main Menu and continue setting up the ChannelWorks Bridge for operation.

Starting The ChannelWorks Bridge

Refer to *ChannelWorks Network Installer's Guide*, Chapter 4, "Starting the ChannelWorks Bridge," for procedures to:

- Attach the ChannelWorks Bridge to your cable TV network
- Attach the ChannelWorks Bridge to your Ethernet network
- Power up the ChannelWorks Bridge
- Verify the ChannelWorks Bridge is operational

TransMaster Frequency Switch Settings

Introduction

This appendix provides input and output switch settings for LANcity Corporation's TransMaster, frequency-agile, single-channel translator. Table A-1 lists the switch settings from 10 MHz to 550 MHz in 250 KHz increments.

Table A-1 TransMaster Frequency Switch Settings

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
10	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
10.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
10.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
10.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
11	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
11.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
11.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
11.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
12	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
12.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
12.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
12.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
13	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN			
13.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
13.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
13.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
14	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
14.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
14.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
14.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
15	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
15.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
15.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
15.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
16	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
16.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
16.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
16.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
17	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
17.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
17.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
17.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
18	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
18.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
18.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
18.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
19	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
19.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
19.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
19.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
20	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
20.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
20.5	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
20.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
21	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN			
21.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
21.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
21.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
22	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
22.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
22.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
22.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
23	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
23.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
23.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			
23.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

24	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
24.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
24.5	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
24.75	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
25	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
25.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
25.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
25.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
26	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
26.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
26.5	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
26.75	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
27	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
27.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
27.5	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
27.75	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
28	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN
28.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN						
28.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN						
28.75	DOWN	UP	DOWN	DOWN	UP	DOWN							
29	UP	DOWN	DOWN	UP	DOWN								
29.25	DOWN	UP	DOWN	UP	DOWN								
29.5	UP	DOWN	UP	DOWN	UP	DOWN							
29.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN						
30	UP	UP	DOWN	UP	DOWN	UP	DOWN						
30.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
30.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
30.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
31	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
31.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
31.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
31.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
32	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
32.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
32.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
32.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
33	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
33.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
33.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
33.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
34	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
34.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
34.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
34.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
35	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
35.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
35.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
35.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
36	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
36.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
36.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
36.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
37	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
37.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
37.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
37.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
38	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
38.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
38.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
38.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
39	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
39.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
39.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN
39.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies.
When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
40	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
40.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
40.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
40.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
41	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
41.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
41.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
41.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
42	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
42.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
42.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
42.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
43	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
43.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
43.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
43.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
44	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
44.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
44.5	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
44.75	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
45	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN			
45.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
45.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
45.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
46	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
46.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
46.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
46.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
47	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
47.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
47.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
47.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
48	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
48.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
48.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
48.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
49	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
49.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
49.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
49.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
50	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
50.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
50.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
50.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
51	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
51.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
51.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
51.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
52	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
52.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
52.5	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
52.75	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
53	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
53.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
53.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
53.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
54	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
54.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
54.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
54.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
55	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
55.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
55.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
55.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
56	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
56.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
56.5	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
56.75	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
57	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
57.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
57.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
57.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
58	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
58.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
58.5	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
58.75	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
59	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
59.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
59.5	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
59.75	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
60	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
60.25	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
60.5	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
60.75	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN			
61	UP	DOWN	DOWN	UP	DOWN	UP	DOWN									
61.25	DOWN	UP	DOWN	UP	DOWN	UP	DOWN									
61.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
61.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
62	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
62.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
62.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
62.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
63	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
63.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
63.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
63.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
64	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
64.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
64.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
64.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
65	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
65.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
65.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
65.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
66	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
66.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
66.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
66.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
67	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
67.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
67.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
67.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
68	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
68.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
68.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
68.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
69	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
69.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
69.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
69.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
70	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
70.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
70.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
70.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
71	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
71.25	DOWN	DOWN	DOWN	UP	DOWN											
71.5	UP	DOWN	DOWN	UP	DOWN											
71.75	DOWN	UP	DOWN													

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
72	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
72.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
72.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
72.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
73	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
73.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
73.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
73.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
74	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
74.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
74.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
74.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
75	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
75.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
75.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
75.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
76	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
76.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
76.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
76.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
77	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN			
77.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
77.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
77.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
78	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
78.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
78.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
78.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
79	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
79.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
79.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
79.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
80	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
80.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
80.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
80.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
81	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
81.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
81.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
81.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
82	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
82.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
82.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
82.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
83	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
83.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
83.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
83.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
84	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
84.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
84.5	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
84.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
85	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN			
85.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
85.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
85.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
86	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
86.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
86.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
86.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
87	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
87.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
87.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
87.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
88	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
88.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
88.5	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
88.75	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
89	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
89.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
89.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
89.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
90	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
90.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
90.5	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
90.75	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
91	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
91.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
91.5	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
91.75	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
92	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
92.25	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
92.5	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN			
92.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN									
93	UP	DOWN	UP	DOWN	UP	DOWN										
93.25	DOWN	UP	UP	DOWN	UP	DOWN										
93.5	UP	DOWN	UP	UP	DOWN	UP	DOWN									
93.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
94	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
94.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
94.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
94.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
95	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
95.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
95.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
95.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
96	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
96.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
96.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
96.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
97	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
97.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
97.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
97.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
98	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
98.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
98.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
98.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
99	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
99.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
99.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
99.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
100	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
100.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
100.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
100.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
101	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
101.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
101.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
101.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
102	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
102.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
102.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
102.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
103	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
103.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
103.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
103.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
104	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
104.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
104.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
104.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
105	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
105.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
105.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
105.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
106	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
106.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
106.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
106.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
107	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
107.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
107.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
107.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
108	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
108.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
108.5	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
108.75	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
109	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN			
109.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
109.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
109.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
110	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
110.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
110.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
110.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
111	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
111.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
111.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
111.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
112	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
112.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
112.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
112.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
113	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
113.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
113.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
113.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
114	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
114.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
114.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
114.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
115	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
115.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
115.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
115.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
116	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
116.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
116.5	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
116.75	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
117	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN			
117.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
117.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
117.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
118	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
118.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
118.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
118.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
119	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
119.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
119.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
119.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
120	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
120.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
120.5	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
120.75	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
121	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
121.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
121.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
121.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
122	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
122.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
122.5	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
122.75	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
123	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
123.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
123.5	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
123.75	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
124	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
124.25	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
124.5	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
124.75	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN			
125	UP	DOWN	UP	UP	DOWN	UP	DOWN									
125.25	DOWN	UP	UP	UP	DOWN	UP	DOWN									
125.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
125.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
126	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
126.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
126.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
126.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
127	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
127.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
127.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
127.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
128	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
128.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
128.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
128.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
129	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
129.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
129.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
129.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
130	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
130.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
130.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
130.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
131	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
131.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
131.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
131.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
132	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
132.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
132.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
132.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
133	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN			
133.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
133.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
133.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
134	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
134.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
134.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
134.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
135	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
135.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
135.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
135.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
136	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
136.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
136.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
136.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
137	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
137.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
137.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
137.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
138	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
138.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
138.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
138.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
139	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
139.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
139.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
139.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
140	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
140.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
140.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
140.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
141	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN			
141.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
141.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
141.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
142	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
142.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
142.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
142.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
143	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
143.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
143.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
143.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
144	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
144.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
144.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
144.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
145	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
145.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
145.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
145.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
146	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
146.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
146.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
146.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
147	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
147.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
147.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
147.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
148	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
148.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
148.5	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
148.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
149	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN			
149.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
149.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
149.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
150	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
150.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
150.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
150.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
151	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
151.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
151.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
151.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
152	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
152.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
152.5	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
152.75	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
153	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
153.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
153.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
153.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
154	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
154.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
154.5	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
154.75	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
155	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN			
155.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN									
155.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN									
155.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN									
156	UP	UP	DOWN	UP	DOWN	UP	DOWN									
156.25	DOWN	DOWN	UP	DOWN	UP	DOWN										
156.5	UP	DOWN	UP	DOWN	UP	DOWN										
156.75	DOWN	UP	DOWN	UP	DOWN											
157	UP	DOWN	UP	DOWN												
157.25	DOWN	UP	UP	DOWN												
157.5	UP	DOWN	UP	UP	DOWN											
157.75	DOWN	UP	DOWN	UP	UP	DOWN										
158	UP	UP	DOWN	UP	UP	DOWN										
158.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN									
158.5	UP	DOWN	UP	DOWN	UP	UP	DOWN									
158.75	DOWN	UP	UP	DOWN	UP	UP	DOWN									
159	UP	UP	UP	DOWN	UP	UP	DOWN									
159.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
159.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
159.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
160	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
160.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
160.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
160.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
161	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
161.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
161.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
161.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
162	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
162.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
162.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
162.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
163	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
163.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
163.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
163.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
164	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
164.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
164.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
164.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
165	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
165.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
165.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
165.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
166	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
166.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
166.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
166.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
167	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
167.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
167.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
167.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
168	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
168.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
168.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
168.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
169	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
169.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
169.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
169.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
170	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
170.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
170.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
170.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
171	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
171.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
171.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
171.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
172	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
172.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
172.5	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
172.75	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
173	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN			
173.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
173.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
173.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
174	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
174.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
174.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
174.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
175	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
175.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
175.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
175.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
176	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
176.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
176.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
176.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
177	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
177.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
177.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
177.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
178	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
178.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
178.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
178.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
179	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
179.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
179.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
179.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
180	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
180.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
180.5	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
180.75	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
181	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
181.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
181.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
181.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
182	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
182.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
182.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
182.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
183	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
183.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
183.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
183.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
184	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
184.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
184.5	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
184.75	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
185	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
185.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
185.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
185.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
186	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
186.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
186.5	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
186.75	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
187	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
187.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
187.5	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
187.75	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
188	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
188.25	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
188.5	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
188.75	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN			
189	UP	DOWN	DOWN	DOWN	UP	UP	DOWN									
189.25	DOWN	UP	DOWN	DOWN	UP	UP	DOWN									
189.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
189.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
190	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
190.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
190.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
190.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
191	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
191.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
191.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
191.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
192	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
192.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
192.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
192.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
193	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
193.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
193.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
193.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
194	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
194.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
194.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
194.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
195	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
195.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
195.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
195.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
196	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
196.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
196.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
196.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
197	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
197.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
197.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
197.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
198	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
198.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
198.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
198.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
199	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
199.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
199.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
199.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
200	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
200.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
200.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
200.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
201	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
201.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
201.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
201.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
202	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
202.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
202.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
202.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
203	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
203.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
203.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
203.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
204	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
204.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
204.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
204.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
205	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN			
205.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
205.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
205.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
206	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
206.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
206.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
206.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
207	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
207.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
207.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
207.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
208	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
208.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
208.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
208.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
209	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
209.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
209.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
209.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
210	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
210.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
210.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
210.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
211	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
211.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
211.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
211.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
212	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
212.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
212.5	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
212.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
213	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN			
213.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
213.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
213.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
214	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
214.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
214.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
214.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
215	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
215.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
215.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
215.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
216	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
216.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
216.5	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
216.75	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
217	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
217.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
217.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
217.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
218	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
218.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
218.5	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
218.75	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
219	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
219.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
219.5	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
219.75	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
220	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
220.25	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
220.5	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN			
220.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN									
221	UP	DOWN	DOWN	UP	UP	DOWN										
221.25	DOWN	UP	DOWN	UP	UP	DOWN										
221.5	UP	DOWN	UP	DOWN	UP	UP	DOWN									
221.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
222	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
222.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
222.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
222.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
223	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
223.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
223.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
223.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
224	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
224.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
224.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
224.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
225	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
225.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
225.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
225.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
226	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
226.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
226.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
226.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
227	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
227.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
227.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
227.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
228	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
228.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
228.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
228.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
229	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
229.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
229.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
229.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
230	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
230.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
230.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
230.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
231	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
231.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
231.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
231.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
232	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
232.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
232.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
232.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
233	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
233.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
233.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
233.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
234	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
234.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
234.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
234.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
235	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
235.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
235.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
235.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
236	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
236.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
236.5	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
236.75	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
237	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN			
237.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
237.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
237.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
238	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
238.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
238.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
238.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
239	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
239.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
239.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
239.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
240	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
240.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
240.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
240.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
241	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
241.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
241.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
241.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
242	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
242.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
242.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
242.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
243	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
243.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
243.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
243.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
244	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
244.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
244.5	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
244.75	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
245	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN			
245.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
245.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
245.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
246	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
246.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
246.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
246.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
247	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
247.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
247.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
247.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
248	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
248.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
248.5	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
248.75	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
249	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
249.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
249.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
249.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
250	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
250.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
250.5	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
250.75	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
251	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
251.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
251.5	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
251.75	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
252	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
252.25	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
252.5	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
252.75	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN			
253	UP	DOWN	UP	DOWN	UP	UP	DOWN									
253.25	DOWN	UP	UP	DOWN	UP	UP	DOWN									
253.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
253.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
254	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
254.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
254.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
254.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
255	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
255.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
255.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
255.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
256	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
256.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
256.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
256.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
257	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
257.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
257.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
257.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
258	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
258.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
258.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
258.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
259	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
259.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
259.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
259.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
260	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
260.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
260.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
260.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
261	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN			
261.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
261.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
261.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
262	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
262.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
262.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
262.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
263	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
263.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
263.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
263.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
264	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
264.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
264.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
264.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
265	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
265.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
265.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
265.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
266	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
266.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
266.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
266.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
267	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
267.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
267.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
267.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
268	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
268.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
268.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
268.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
269	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN			
269.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
269.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
269.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
270	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
270.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
270.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
270.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
271	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
271.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
271.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
271.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
272	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
272.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
272.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
272.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
273	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
273.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
273.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
273.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
274	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
274.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
274.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
274.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
275	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
275.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
275.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
275.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
276	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
276.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
276.5	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
276.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
277	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN			
277.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
277.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
277.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
278	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
278.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
278.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
278.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
279	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
279.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
279.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
279.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
280	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
280.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
280.5	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
280.75	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
281	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
281.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
281.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
281.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
282	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
282.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
282.5	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
282.75	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
283	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
283.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
283.5	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
283.75	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
284	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN			
284.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN									
284.5	UP	DOWN	UP	DOWN	UP	UP	DOWN									
284.75	DOWN	UP	DOWN	UP	UP	DOWN										
285	UP	DOWN	UP	UP	DOWN											
285.25	DOWN	UP	UP	UP	DOWN											
285.5	UP	DOWN	UP	UP	UP	DOWN										
285.75	DOWN	UP	DOWN	UP	UP	UP	DOWN									
286	UP	UP	DOWN	UP	UP	UP	DOWN									
286.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
286.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
286.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
287	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
287.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
287.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
287.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
288	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
288.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
288.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
288.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
289	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
289.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
289.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
289.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
290	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
290.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
290.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
290.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
291	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
291.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
291.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
291.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
292	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
292.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
292.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
292.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
293	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
293.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
293.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
293.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
294	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
294.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
294.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
294.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
295	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
295.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
295.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
295.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
296	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
296.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
296.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
296.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
297	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
297.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
297.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
297.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
298	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
298.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
298.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
298.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
299	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
299.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
299.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
299.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
300	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
300.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
300.5	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
300.75	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
301	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN			
301.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
301.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
301.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
302	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
302.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
302.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
302.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
303	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
303.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
303.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
303.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
304	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
304.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
304.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
304.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
305	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
305.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
305.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
305.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
306	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
306.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
306.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
306.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
307	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
307.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
307.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
307.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
308	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
308.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
308.5	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
308.75	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
309	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN			
309.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
309.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
309.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
310	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
310.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
310.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
310.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
311	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
311.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
311.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
311.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
312	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
312.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
312.5	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
312.75	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
313	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
313.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
313.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
313.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
314	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
314.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
314.5	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
314.75	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
315	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
315.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
315.5	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
315.75	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
316	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
316.25	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
316.5	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
316.75	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN			
317	UP	DOWN	DOWN	UP	UP	UP	DOWN									
317.25	DOWN	UP	DOWN	UP	UP	UP	DOWN									
317.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
317.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
318	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
318.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
318.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
318.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
319	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
319.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
319.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
319.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
320	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
320.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
320.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
320.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
321	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
321.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
321.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
321.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
322	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
322.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
322.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
322.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
323	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
323.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
323.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
323.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
324	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
324.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
324.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
324.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
325	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN			
325.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
325.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
325.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
326	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
326.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
326.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
326.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
327	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
327.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
327.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
327.75	DOWN	UP	UP	UP	DOWN											

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
328	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
328.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
328.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
328.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
329	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
329.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
329.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
329.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
330	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
330.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
330.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
330.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
331	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
331.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
331.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
331.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
332	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
332.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
332.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
332.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
333	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN			
333.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
333.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
333.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
334	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
334.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
334.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
334.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
335	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
335.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
335.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
335.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
336	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
336.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
336.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
336.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
337	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
337.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
337.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
337.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
338	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
338.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
338.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
338.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
339	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
339.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
339.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
339.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
340	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
340.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
340.5	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
340.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
341	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN			
341.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
341.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
341.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
342	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
342.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
342.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
342.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
343	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
343.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
343.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
343.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
344	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
344.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
344.5	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
344.75	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
345	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
345.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
345.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
345.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
346	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
346.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
346.5	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
346.75	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
347	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
347.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
347.5	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
347.75	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
348	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
348.25	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
348.5	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN			
348.75	DOWN	UP	DOWN	UP	UP	UP	DOWN									
349	UP	DOWN	UP	UP	UP	DOWN										
349.25	DOWN	UP	UP	UP	UP	DOWN										
349.5	UP	DOWN	UP	UP	UP	UP	DOWN									
349.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
350	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
350.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
350.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
350.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
351	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
351.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
351.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
351.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
352	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
352.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
352.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
352.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
353	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
353.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
353.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
353.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
354	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
354.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
354.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
354.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
355	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
355.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
355.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
355.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
356	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
356.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
356.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
356.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
357	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN			
357.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
357.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
357.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
358	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
358.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
358.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
358.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
359	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
359.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
359.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
359.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies.
When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
360	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
360.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
360.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
360.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
361	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
361.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
361.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
361.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
362	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
362.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
362.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
362.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
363	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
363.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
363.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
363.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
364	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
364.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
364.5	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
364.75	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
365	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN			
365.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
365.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
365.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
366	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
366.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
366.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
366.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
367	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
367.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
367.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
367.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
368	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
368.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
368.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
368.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
369	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
369.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
369.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
369.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
370	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
370.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
370.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
370.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
371	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
371.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
371.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
371.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
372	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
372.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
372.5	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
372.75	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
373	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN			
373.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
373.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
373.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
374	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
374.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
374.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
374.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
375	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
375.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
375.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
375.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
376	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
376.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
376.5	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
376.75	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
377	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
377.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
377.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
377.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
378	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
378.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
378.5	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
378.75	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
379	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
379.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
379.5	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
379.75	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
380	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
380.25	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
380.5	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
380.75	DOWN	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN			
381	UP	DOWN	UP	UP	UP	UP	DOWN									
381.25	DOWN	UP	UP	UP	UP	UP	DOWN									
381.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
381.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
382	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
382.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
382.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
382.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
383	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
383.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
383.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
383.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
384	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
384.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
384.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
384.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
385	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
385.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
385.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
385.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
386	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
386.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
386.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
386.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
387	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
387.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
387.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
387.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
388	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
388.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
388.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
388.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
389	UP	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN			
389.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
389.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
389.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
390	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
390.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
390.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
390.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
391	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
391.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
391.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
391.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
392	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
392.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
392.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
392.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
393	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
393.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
393.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
393.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
394	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
394.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
394.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
394.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
395	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
395.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
395.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
395.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
396	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
396.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
396.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
396.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
397	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN			
397.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
397.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
397.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
398	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
398.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
398.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
398.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
399	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
399.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
399.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
399.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
400	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
400.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
400.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
400.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
401	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
401.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
401.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
401.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
402	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
402.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
402.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
402.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
403	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
403.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
403.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
403.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
404	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
404.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
404.5	UP	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
404.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
405	UP	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN			
405.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
405.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
405.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
406	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
406.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
406.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
406.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
407	UP	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
407.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
407.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			
407.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	UP	DOWN			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
408	UP	UP	DOWN	UP	DOWN	UP	DOWN									
408.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN									
408.5	UP	DOWN	UP	UP	DOWN	UP	DOWN									
408.75	DOWN	UP	UP	UP	DOWN	UP	DOWN									
409	UP	UP	UP	UP	DOWN	UP	DOWN									
409.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN										
409.5	UP	DOWN	DOWN	DOWN	UP	DOWN										
409.75	DOWN	UP	DOWN	DOWN	UP	DOWN										
410	UP	UP	DOWN	DOWN	UP	DOWN										
410.25	DOWN	DOWN	UP	DOWN	UP	DOWN										
410.5	UP	DOWN	UP	DOWN	UP	DOWN										
410.75	DOWN	UP	UP	DOWN	UP	DOWN										
411	UP	UP	UP	DOWN	UP	DOWN										
411.25	DOWN	DOWN	DOWN	UP	DOWN											
411.5	UP	DOWN	DOWN	UP	DOWN											
411.75	DOWN	UP	DOWN	UP	DOWN											
412	UP	UP	DOWN	UP	DOWN											
412.25	DOWN	DOWN	UP	DOWN												
412.5	UP	DOWN	UP	DOWN												
412.75	DOWN	UP	DOWN													
413	UP	DOWN														
413.25	DOWN	UP														
413.5	UP	DOWN	UP													
413.75	DOWN	UP	DOWN	UP												
414	UP	UP	DOWN	UP												
414.25	DOWN	DOWN	UP	DOWN	UP											
414.5	UP	DOWN	UP	DOWN	UP											
414.75	DOWN	UP	UP	DOWN	UP											
415	UP	UP	UP	DOWN	UP											
415.25	DOWN	DOWN	DOWN	UP	DOWN	UP										
415.5	UP	DOWN	DOWN	UP	DOWN	UP										
415.75	DOWN	UP	DOWN	UP	DOWN	UP										
416	UP	UP	DOWN	UP	DOWN	UP										
416.25	DOWN	DOWN	UP	UP	DOWN	UP										
416.5	UP	DOWN	UP	UP	DOWN	UP										
416.75	DOWN	UP	UP	UP	DOWN	UP										
417	UP	UP	UP	UP	DOWN	UP										
417.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP									
417.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP									
417.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP									
418	UP	UP	DOWN	DOWN	UP	DOWN	UP									
418.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP									
418.5	UP	DOWN	UP	DOWN	UP	DOWN	UP									
418.75	DOWN	UP	UP	DOWN	UP	DOWN	UP									
419	UP	UP	UP	DOWN	UP	DOWN	UP									
419.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP									
419.5	UP	DOWN	DOWN	UP	UP	DOWN	UP									
419.75	DOWN	UP	DOWN	UP	UP	DOWN	UP									
420	UP	UP	DOWN	UP	UP	DOWN	UP									
420.25	DOWN	DOWN	UP	UP	UP	DOWN	UP									
420.5	UP	DOWN	UP	UP	UP	DOWN	UP									
420.75	DOWN	UP	UP	UP	UP	DOWN	UP									
421	UP	UP	UP	UP	UP	DOWN	UP									
421.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
421.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
421.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
422	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
422.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
422.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
422.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
423	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
423.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
423.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
423.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
424	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
424.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
424.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
424.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
425	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
425.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
425.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
425.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
426	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
426.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
426.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
426.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
427	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
427.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
427.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
427.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
428	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
428.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
428.5	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
428.75	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
429	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
429.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
429.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
429.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
430	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
430.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
430.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
430.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
431	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
431.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
431.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
431.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
432	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
432.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
432.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
432.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
433	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
433.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
433.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
433.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
434	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
434.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
434.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
434.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
435	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
435.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
435.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
435.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
436	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
436.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
436.5	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
436.75	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
437	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
437.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
437.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
437.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
438	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
438.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
438.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
438.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
439	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
439.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
439.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
439.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
440	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
440.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
440.5	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
440.75	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
441	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
441.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
441.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
441.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
442	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
442.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
442.5	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
442.75	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
443	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
443.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
443.5	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
443.75	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
444	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
444.25	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
444.5	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
444.75	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP			
445	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP									
445.25	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP									
445.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
445.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
446	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
446.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
446.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
446.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
447	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
447.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
447.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
447.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
448	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
448.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
448.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
448.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
449	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
449.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
449.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
449.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
450	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
450.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
450.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
450.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
451	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
451.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
451.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
451.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
452	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
452.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
452.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
452.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
453	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
453.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
453.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
453.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
454	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
454.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
454.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
454.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
455	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
455.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
455.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
455.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
456	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
456.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
456.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
456.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
457	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
457.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
457.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
457.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
458	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
458.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
458.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
458.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
459	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
459.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
459.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
459.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
460	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
460.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
460.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
460.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
461	UP	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP			
461.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
461.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
461.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
462	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
462.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
462.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
462.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
463	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
463.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
463.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
463.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
464	UP	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
464.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
464.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
464.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
465	UP	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
465.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
465.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
465.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
466	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
466.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
466.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
466.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
467	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
467.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
467.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
467.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
468	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
468.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
468.5	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
468.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
469	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
469.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
469.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
469.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
470	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
470.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
470.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
470.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
471	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
471.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
471.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
471.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
472	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
472.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
472.5	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
472.75	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
473	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
473.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
473.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
473.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
474	UP	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
474.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
474.5	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
474.75	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
475	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
475.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
475.5	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
475.75	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
476	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
476.25	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
476.5	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP			
476.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP									
477	UP	DOWN	DOWN	DOWN	DOWN	UP										
477.25	DOWN	UP	DOWN	DOWN	DOWN	UP										
477.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP									
477.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
478	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
478.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
478.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
478.75	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
479	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
479.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
479.5	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
479.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
480	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
480.25	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
480.5	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
480.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
481	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
481.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
481.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
481.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
482	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
482.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
482.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
482.75	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
483	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
483.25	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
483.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
483.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
484	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
484.25	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
484.5	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
484.75	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
485	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
485.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
485.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
485.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
486	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
486.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
486.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
486.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
487	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
487.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
487.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
487.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
488	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
488.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
488.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
488.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
489	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
489.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
489.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
489.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
490	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
490.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
490.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
490.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
491	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
491.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
491.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
491.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
492	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
492.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
492.5	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
492.75	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
493	UP	UP	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP			
493.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
493.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
493.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
494	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
494.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
494.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
494.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
495	UP	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
495.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
495.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
495.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
496	UP	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
496.25	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
496.5	UP	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
496.75	DOWN	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
497	UP	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
497.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
497.5	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
497.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
498	UP	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
498.25	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
498.5	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
498.75	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
499	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
499.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
499.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
499.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
500	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
500.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
500.5	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
500.75	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
501	UP	UP	UP	UP	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
501.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
501.5	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
501.75	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
502	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
502.25	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
502.5	UP	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
502.75	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
503	UP	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
503.25	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
503.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
503.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			

*Refer to Chapter 3 for information on using switches 14, 15, and 16 when selecting input (return) frequencies. When selecting output (forward) frequencies, switches 14, 15, and 16 must be in the down position.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
504	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
504.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
504.5	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
504.75	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
505	UP	UP	UP	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
505.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
505.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
505.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
506	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
506.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
506.5	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
506.75	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
507	UP	UP	UP	DOWN	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
507.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
507.5	UP	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
507.75	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
508	UP	UP	DOWN	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
508.25	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
508.5	UP	DOWN	UP	UP	UP	UP	UP	DOWN	UP	DOWN	DOWN	DOWN	UP			
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510.5	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
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511	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
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511.75	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
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512.75	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
513	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
513.25	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
513.5	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
513.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
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515.5	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
515.75	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
516	UP	UP	DOWN	UP	UP	DOWN	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
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517.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
517.5	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
517.75	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
518	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
518.25	DOWN	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
518.5	UP	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
518.75	DOWN	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
519	UP	UP	UP	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
519.25	DOWN	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
519.5	UP	DOWN	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
519.75	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			

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	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
520	UP	UP	DOWN	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
520.25	DOWN	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
520.5	UP	DOWN	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
520.75	DOWN	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
521	UP	UP	UP	UP	DOWN	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
521.25	DOWN	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
521.5	UP	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
521.75	DOWN	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
522	UP	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
522.25	DOWN	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
522.5	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
522.75	DOWN	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
523	UP	UP	UP	DOWN	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
523.25	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
523.5	UP	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
523.75	DOWN	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
524	UP	UP	DOWN	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
524.25	DOWN	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
524.5	UP	DOWN	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
524.75	DOWN	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
525	UP	UP	UP	UP	UP	UP	DOWN	UP	UP	DOWN	DOWN	DOWN	UP			
525.25	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
525.5	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
525.75	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
526	UP	UP	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
526.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
526.5	UP	DOWN	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
526.75	DOWN	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
527	UP	UP	UP	DOWN	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
527.25	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
527.5	UP	DOWN	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
527.75	DOWN	UP	DOWN	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
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529	UP	UP	UP	UP	DOWN	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
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529.75	DOWN	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
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531	UP	UP	UP	DOWN	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
531.25	DOWN	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
531.5	UP	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
531.75	DOWN	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
532	UP	UP	DOWN	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
532.25	DOWN	DOWN	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
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532.75	DOWN	UP	UP	UP	UP	DOWN	UP	UP	UP	DOWN	DOWN	DOWN	UP			
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533.25	DOWN	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
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535.5	UP	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
535.75	DOWN	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			

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	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13	SW14*	SW15*	SW16*
536	UP	UP	DOWN	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
536.25	DOWN	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
536.5	UP	DOWN	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
536.75	DOWN	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
537	UP	UP	UP	UP	DOWN	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
537.25	DOWN	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
537.5	UP	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
537.75	DOWN	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
538	UP	UP	DOWN	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
538.25	DOWN	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
538.5	UP	DOWN	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
538.75	DOWN	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
539	UP	UP	UP	DOWN	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
539.25	DOWN	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
539.5	UP	DOWN	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
539.75	DOWN	UP	DOWN	UP	UP	UP	UP	UP	UP	DOWN	DOWN	DOWN	UP			
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541.25	DOWN	UP	DOWN	DOWN	UP											
541.5	UP	DOWN	UP	DOWN	DOWN	UP										
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542	UP	UP	DOWN	UP	DOWN	DOWN	UP									
542.25	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP			
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545	UP	UP	UP	UP	DOWN	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP			
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545.75	DOWN	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP			
546	UP	UP	DOWN	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP			
546.25	DOWN	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP			
546.5	UP	DOWN	UP	DOWN	UP	DOWN	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP			
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550	UP	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	DOWN	UP	DOWN	DOWN	UP			

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Completeness	1	2	3	4	5

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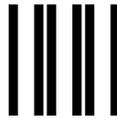
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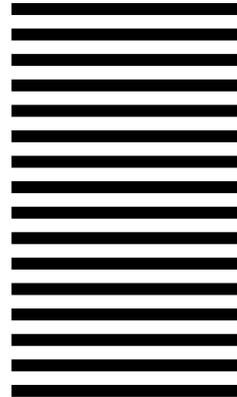
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