

Attention and Warning Symbols

You must be aware of safety when you install and use this system. This guide provides various procedures. If you do some of these procedures carelessly, you could injure or kill yourself or damage equipment or property. Some other procedures require special attention.



Marks a procedure where the following may happen:

- Personal injury or death may occur.
- Equipment or property may be damaged.



Marks the following issues:

- Important operation or maintenance instructions follow.
- Special attention is required.

Important Safety Instructions

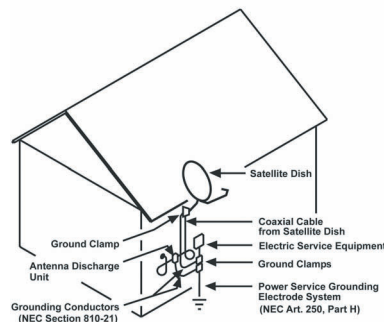
You must keep safety in mind when you install and use the DISH 1000.2. Refer to the safety instructions in the installation instructions that came with your system. In this guide, the following notes tell you when you need to pay special attention:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.

Keep the following in mind when you install the DISH 1000.2:

- Before you drill any holes in your building, make sure there are no wires or pipes near the holes.
- Install the equipment in accordance with the local building and electrical codes. If you aren't sure, call a licensed building inspector or electrician for help.
- Never install the satellite dish near power lines.
- Don't install the satellite dish on composite materials such as strand, chip, fiber, or particle board unless the fastener attaches securely to a wall stud, rafter, or other foundation material beneath the surface.

Note to Satellite TV System Installer: This reminder is provided to call the satellite TV system installer's attention to Article 820-40 of the *National Electrical Code* (NEC) that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.



Installation Instructions



Attention! These installation instructions are intended for use by qualified professional technicians due to the complexity of the installation and compliance to national/local building and electrical codes.

Overview

These instructions guide you through the installation of a DISH Network DISH 1000.2 antenna, which consists of a reflector assembly and a DISH Pro Plus 1000.2 LNBF. The DISH 1000.2 is capable of receiving digital television signals from three DBS satellite locations: 110°W, 119°W, and 129°W. These instructions cover wall mounting only. For other mounting options (for example, pole mounting, or non-penetrating mounting), see the Retailer Care Site at retailer.echostar.com.

Installation Considerations

While all DISH Network satellite receivers can be connected to the DISH 1000.2, the following models may not detect and will not support the 129°W location: 1000, 2000, 3000, 4000, 5000, JVC-DVHS (IRR), and the DishPlayer 7100/7200.

This installation supports Legacy receivers, but there must be at least one DISH Pro or DISH Pro Plus receiver in the installation. Legacy receivers are receivers which do not have the DISH Pro or DISH Pro Plus logo (shown below).



About the System

The DISH Pro Plus 1000.2 LNBF provides reception from the 110°W, 119°W, and 129°W orbital locations, and provides an LNBF input port to receive programming from another satellite. The following LNBF types can be connected to the LNBF input port: DISH Pro Single, DISH Pro Dual, or DISH Network bandstacked LNBFs.

The LNBF assembly supports connection of up to three satellite receivers in any of the following combinations:

- Single-cable connection to DISH Pro Plus (dual-tuner) receivers, when each input is used with a DISH Pro Plus Separator.
- Single-cable connection to DISH Pro receivers.
- Single-cable connection to a Legacy receiver provided that a DISH Pro or DISH Pro Plus receiver is also connected and powered at all times. No DISH Pro Adapter is required.

Quick Installation Instructions

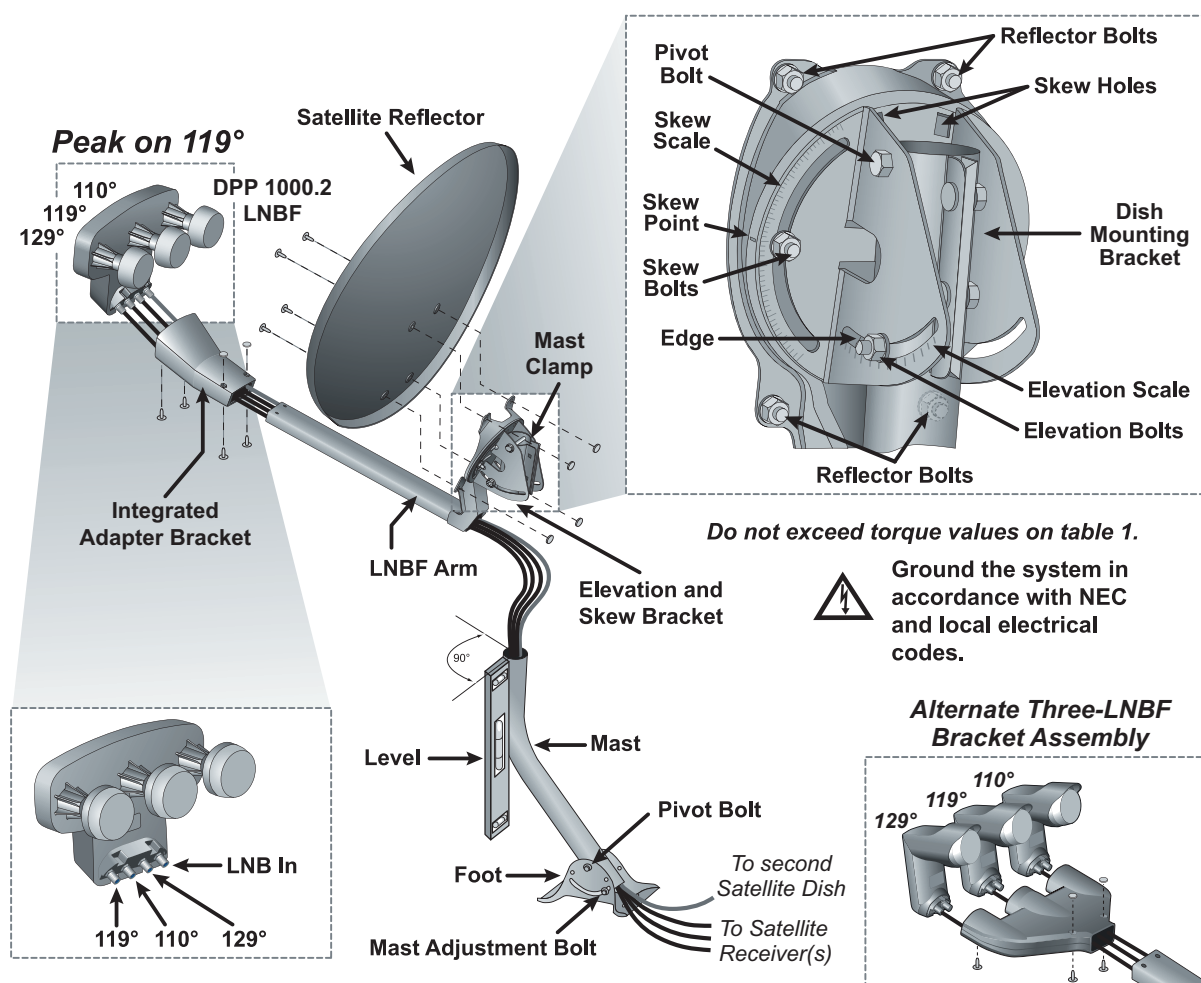


Figure 1. DISH 1000.2 Antenna Installation Overview

1. Find Azimuth/Elevation/Skew angles for your location (instructions on page 3 and tables on page 10).
2. Find a location for the dish antenna with a clear line of sight and a sturdy mounting surface (page 3, step 1).
3. Mount the mast, making sure it is absolutely vertical (page 3, steps 2 and 3).
4. Assemble the dish antenna, setting the skew and elevation angles in the process. Use additional skew bolts for skew angles greater than 110 or less than 70 (page 3, steps 4-6).
5. Mount the dish antenna on the mast and point the dish to the azimuth angle (page 4, step 7).
6. Run cables between the dish antenna and the receiver(s), leaving a service loop around the Mast Clamp (page 5, step 1).
7. Using a peaking meter attached to the DPP 1000.2 LNB **PORT 1**, peak the dish on 119°W using transponder 11 or higher for maximum strength. Tighten all bolts (see Table 1) and re-confirm maximum signal (page 5, steps 2-5).

Note: The 1000.2 Three-LNBF Bracket with three DP Dual (or DP Single) LNBFs can be used in place of the Integrated Adapter Bracket and DPP 1000.2 LNB.

8. Connect the receiver cable(s) to the DPP 1000.2 LNB **PORT 1** (and **PORT 2** and **PORT 3**, as necessary) (page 6, step 6) and receiver. Some restrictions apply when connecting Legacy receivers. See page 7.
9. Run **Check Switch** test and confirm 110°W, 119°W, and 129°W reception (page 6, steps 7-9).
10. Take a software download, if you didn't already (page 7, step 10).
11. Run a **Check Switch** test and confirm 110°W, 119°W, 129° reception (page 7, step 11).
12. Install additional receiver(s), if necessary (page 7, step 12).
13. If applicable, connect a second satellite dish to the DPP 1000.2 LNB's **LNB IN** port (page 8, steps 1-4).

Locating the Dish Antenna

Use the *Angles Tables* starting on page 10 to find the azimuth, elevation, and skew angles using the ZIP code from your location. Write the angles in the space provided below.

Azimuth: _____ **Elevation:** _____ **Skew:** _____

Using these azimuth and elevation angles, find a mounting location for the satellite dish where it can be pointed towards the satellites located at these angles. Use a compass and the azimuth angle to find the direction along the horizon that the dish should be pointed. Then use the elevation angle to find out how high the satellites are in the sky from your location. Make sure nothing blocks the line of sight between the dish and the satellites. Make sure this line of sight will not be blocked by future growth of nearby trees or other foliage. Also make sure your mounting location provides sufficient clearance to rotate the reflector as needed to point toward the satellites.

Assembling and Mounting the Dish

Follow these instructions to assemble the satellite dish, mount it, and point it in the direction of the satellites.

- 1 Using the azimuth and elevation angles, find a location for the satellite dish where it can be pointed towards the satellites located at these angles. Make sure nothing blocks the line of sight between the dish and the satellites.
- 2 Mount the mast to a solid surface so that the dish antenna cannot move or be bumped out of alignment. Keep in mind that physical and environmental conditions can block your satellite dish's ability to receive a clear satellite signal. Never mount to a tree or a public utility pole.
- 3 Align the top part of the mast so that it is absolutely vertical. If the top part of the mast is off vertical by only a few degrees, it will be difficult or maybe even impossible for you to find the satellites. Take at least two readings with a level, on the upper mast, that are 90 degrees apart from one another (see Figure 1).
- 4 Loosen both skew bolts and set the skew by rotating the dish mounting bracket to align the mark with the required angle on the skew scale which you wrote above. Tighten the skew bolts securely. See Table 1 for the required torque values. **After the skew is set, do not try to fine-tune the skew angle when aiming the dish.**

Note: If your skew angle is at the extreme ends of the scale (greater than 110 or less than 70), insert nuts and bolts from the hardware pack into the additional skew holes. These additional skew holes provide greater stability to the dish at these extreme angles. See Figure 2.

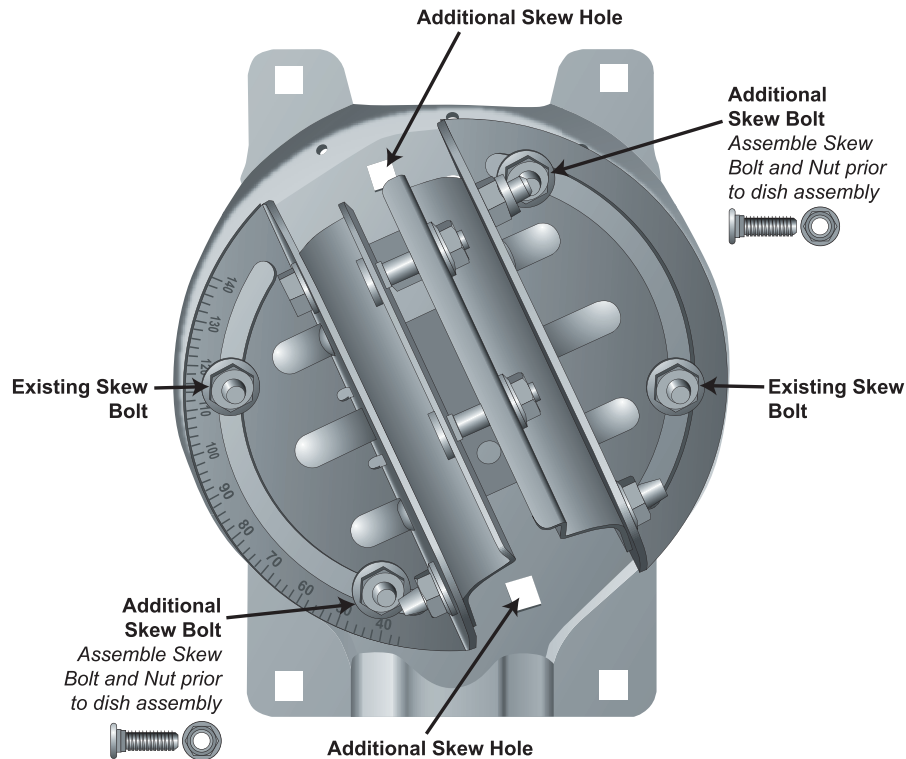


Figure 2. Additional skew holes for use with extreme skew angles

5

Assemble the satellite dish as shown in Figure 1, except do not attach the LNB at this time. When attaching the Integrated Adapter Bracket to the LNB Arm, be sure that the small posts on the bracket fit into the holes on the LNB Arm (see Figure 3).

Note: The Three-LNB Bracket and three DP Dual (or DP Single) LNBFs can be used instead of the Integrated Adapter Bracket and the DPP 1000.2 LNB. The Three-LNB Bracket is not interchangeable with the W-Bracket from the DISH 1000.

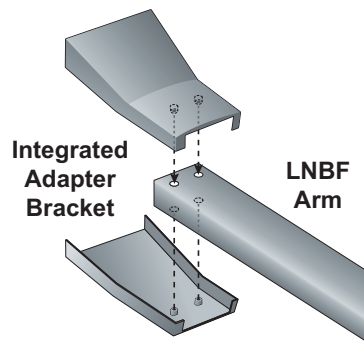


Figure 3. Bracket posts fitting into LNB arm (bolt holes removed for clarity)

6

Set the elevation by loosening then tilting the dish mounting bracket to align the edge with the required angle on the elevation scale. Tighten the elevation bolts snugly to prevent movement.

7

Slide the dish assembly down onto the mast. Make sure the pivot bolt rests on the top of the mast and that the mast is fully inserted into the tab. Turn the dish assembly so that it points in the general direction of the satellites, using the azimuth angle you wrote on page 3.

Installing the Receivers

Use the steps below while referring to Figure 1.

1

Run RG-6 coaxial cables from the DISH 1000.2 antenna to the receiver location(s) using the following cable requirements. Grounding, other devices, and in-home cabling must also meet these requirements.

- RG-6 coaxial cable rated for at least 950 to 2150 MHz must be used in this installation. Do not use existing cables such as RG-59 as it may cause signal loss. Also, be sure that any outdoor connections are made using waterproof F-connectors rated for 2150 MHz or greater.
- The length of the RG-6 cable from any receiver and farthest dish connected in the system must not be longer than:
 - 200 feet for DISH Pro or DISH Pro Plus receivers.
 - 100 feet for Legacy receivers.
- The cable length between the DISH 1000.2 and a connected compatible LNBF must be 80 feet or less.



The cable's center conductor must not extend past the rim of the F-connector more than the thickness of a nickel.



Tighten all outdoor cable connections up to the torque values recommended by the manufacturer to ensure seal against moisture. Damage caused by over-tightening is not covered by the limited warranty. Tighten all indoor coaxial cable connections to the receiver only by hand. If you use a wrench, you may over-tighten the connections and damage your equipment.

2

Connect a temporary cable to a peaking meter. Thread the other end of the cable through the LNBF arm and bracket. Connect the temporary cable to **PORT 1** of the DPP 1000.2 LNBF and attach the LNBF to the bracket with two screws. If using the Three-LNBF bracket and three DP Dual (or DP Single) LNBFs, connect the temporary cable from the peaking meter to the 119°W (center) LNBF. Attach the LNBFs to the bracket using the included screws.

Note: If the peaking meter does not produce at least 600 mA to power the DPP 1000.2 LNBF, connect **PORT 2** of the LNBF to the **SATELLITE IN** port of a powered receiver, or temporarily connect the Three-LNBF bracket with a Dual or Single LNBF for peaking on 119°W.

If you are peaking the dish using a previously-installed receiver, run a Check Switch test with the **SATELLITE IN** cable(s) disconnected before peaking the dish (see step 8 for help running the Check Switch test). This clears the previous Check Switch results and allows the receiver to detect the signal from the DPP 1000.2 LNBF. Set the receiver's Point Dish screen to satellite 119°W and transponder 11 or higher if peaking using this method.

3

Peak the dish for the strongest possible signal on the 119°W satellite signal using the azimuth and elevation settings you wrote on page 3. Do not adjust the skew.

Note: If you cannot find the 119°W signal, try adjusting the elevation up or down one or two degrees. Ensure you are peaking the dish using transponder 11 or higher.

4

With the peaking meter still connected, tighten the mast clamp and elevation bolts using the torque values listed in Table 1 on page 6. Re-confirm signal strength after tightening the bolts.

Table 1: Torque Values

Location	Torque Value (ft-lbs unless otherwise noted)
Mast pivot through bolt (ensure no mast deformation occurs during tightening)	24 in-lbs
Mast locking nuts	12
Reflector mounting bolts	6
Clamp locking bolts	6
Clamp pivot through bolt (ensure no mast deformation occurs during tightening)	24 in-lbs
Elevation adjustment locking nuts	12
Skew adjustment locking nuts	12
LNB and bracket attachment hardware	Handtight

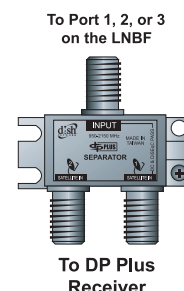
- 5** Remove the temporary cable used for peaking the dish. Thread the cable(s) from the receiver(s) through the LNB arm and bracket. Connect these cables to **PORT 1**, **PORT 2** and **PORT 3**, as applicable.

Note: If using the Three-LNBF Bracket with DP Dual (or DP Single) LNBFs, refer to the section *Connecting to a Switch* on page 9 and the switch's installation instructions for additional details.

- 6** Connect a cable from DPP 1000.2 LNBF **PORT 1** (or **PORT 2** or **PORT 3**) to a DISH Pro or DISH Pro Plus (dual-tuner) satellite receiver's **SATELLITE IN** connection(s). If a Legacy receiver is present, it should be installed last.

To connect DISH Pro Plus (dual-tuner) receivers with a single cable, install a DISH Pro Plus Separator as follows:

- Connect a cable from the DPP 1000.2 LNBF output (**PORT 1**, **PORT 2**, or **PORT 3**) to the DISH Pro Plus Separator Input.
- Connect cables between the receiver's **SATELLITE IN 1** and **SATELLITE IN 2** to **SATELLITE IN 1** and **SATELLITE IN 2** respectively on the DISH Pro Plus Separator.



You must use a DISH Pro Plus Separator in a single-cable/dual-tuner receiver installation. A splitter or other device will not work in this configuration.



Tighten all indoor coaxial cable connections to the receiver only by hand. If you use a wrench, you may over-tighten the connections and damage your equipment.

- 7** Connect the receiver(s) to the TV(s) and display the **Point Dish** screen (if not shown, for most receivers, press MENU-6-1-1 on the remote control).

8

From the **Point Dish** screen, run **Check Switch**. On Legacy receiver models 2800, 3900, 4900, and 6000, select the **SuperDISH Installation-3Sat** option prior to running the Check Switch test. On all other Legacy models, select **Test**. When the Check Switch procedure finishes, you should see an Installation Summary screen similar to the ones shown below. Make sure the summary screen shows reception from the 119°W, 110°W, and 129°W satellites on all available satellite tuners. Also confirm the LNB is correctly identified as a **DPP 1000.2** (factory software on some models may identify this LNB as a **DPP Twin** or **DPP Triple**, which is OK). Legacy receivers will identify the LNB as **SW64**.

Note: On some models, you might not see signal from 129°W until after you take a software download and run a Check Switch in steps 10 and 11. Legacy receiver models 1000, 2000, 3000, 4000, 5000, 7100, 7200, and JVC-DVHS (IRR) may not detect and will not support the 129°W location.

Note: If you are using the Three-LNB Bracket, your Installation Summary screen will vary depending on the connected switch. Make sure the summary screen shows reception from the 119°W, 110°W, and 129°W satellites on all available satellite tuners.

dish Installation Summary Fri, July 8

	Satellite Input 1				Satellite Input 2			
Port:	1	2	3	4	1	2	3	4
Satellite:	119	110	129	X	119	110	129	X
Trans:	OK	OK	OK	X	OK	OK	OK	X
Device:	1K.2	1K.2	1K.2	N.C.	1K.2	1K.2	1K.2	N.C.
Status:	Reception Verified				Reception Verified			
Switch:	DPP 1000.2				DPP 1000.2			

☐ SuperDISH

Details Test Done Help

**DISH Pro/DISH Pro Plus
Installation Summary**

Installation Summary

Installed Switch Model: **SW64**

Input:	1A-1	1B-1	2A-1	2B-1	3A-1	3B-1
Satellite:	119	119	110	110	129	129
Polarity:	Odd	Even	Odd	Even	Odd	Even
Status:	Satellite reception verified					

SuperDISH Installation

☒ 3 Sat ☐ 4 Sat ☐ Full ☐ Alt.

Cancel Test Help

**Legacy
Installation Summary**

9

Exit the **Installation Summary** screen to display the **Point Dish/Signal** screen. Make sure the signal strength bar is green and locked for the 119°W, 110°W, and 129°W satellites.

Note: You might not see signal from 129°W until after you take a software download and run a Check Switch in steps 10 and 11.

10

Exit the **Point Dish/Signal** screen and follow the on-screen instructions for taking a receiver software download. Do not disturb the receiver during the process of downloading software. If exiting the **Point Dish** screen does not start the download process, turn off the receiver for at least 20 minutes (on most receivers) to allow the receiver to take a software download.

11

Run **Check Switch** again and confirm reception for all three satellites on all available satellite tuners. Your Installation Summary screen should be similar to the ones shown above in step 8. Some software on some models may identify the DPP 1000.2 LNB as a **DPP 1K.2**. This identification is OK.

12

If installing an additional receiver, follow steps 6-11. Make sure the summary screen shows reception from the 110°W, 119°W, and 129°W satellites. Keep in mind that a DISH Pro or DISH Pro Plus receiver must remain connected and powered at all times to power the DPP 1000.2 LNB.

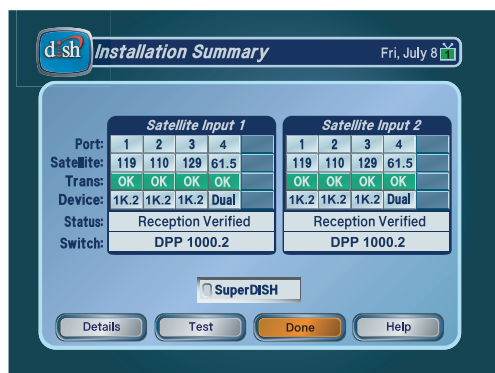
Connecting a Second Satellite Dish

After completing the previous sections to install the DISH 1000.2, use these instructions to add a fourth satellite location from a second dish to the DISH 1000.2. The LNBF from the second dish must be a DISH Pro Single or DISH Pro Dual looking at a DBS satellite location, or a DISH Network bandstacked LNBF.

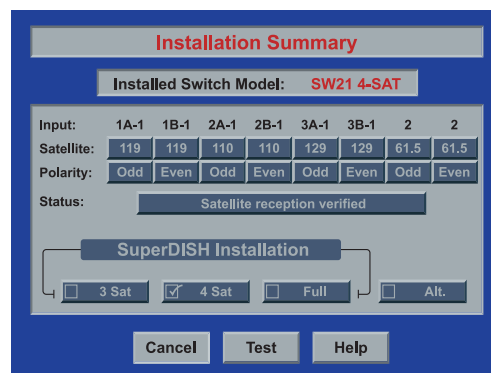
- 1 Install and peak the second dish antenna using a peaking meter and the instructions that came with that dish antenna. Skip any steps regarding taking a receiver software upgrade since this was done in the previous section of the DISH 1000.2 Installation Instructions.
- 2 Run cable from the second dish antenna location to the DISH 1000.2, referring to the cable requirements stated in step 1 on page 5.
- 3 Connect the coaxial cable between the LNBF on the second dish and the **LNB IN** port on the DPP 1000.2 LNBF. Refer to figure 1 on page 2.
- 4 From the **Point Dish** screen (accessed by pressing MENU-6-1-1 on most receivers), run **Check Switch** again on all connected receivers. On Legacy receiver models 2800, 3900, 4900, and 6000, select the **SuperDISH Installation-4Sat** option prior to running the Check Switch test. On all other Legacy models, select **Test**. When the **Check Switch** procedure finishes, you should see a summary screen similar to one of those shown below.

The DISH Pro/DISH Pro Plus summary screen below is similar to what should be shown for DISH Pro and DISH Pro Plus receivers connected to the DISH 1000.2 when a second dish is connected to the **LNB IN** port. Make sure the summary screen shows reception from the 119°W, 110°W, and 129° satellites and the fourth satellite location on all available satellite tuners. If not, re-peak the DISH 1000.2 or the second dish as needed to achieve the required signal levels. Confirm the installed LNBF on the second dish is correctly identified.

The Legacy summary screen below is similar to what should be shown for Legacy receiver models 2800, 3900, 4900 or 6000 connected to the DISH 1000.2 when a second dish is connected to the **LNB IN** port. Make sure the summary screen shows reception from 110°W, 119°W, 129° satellites and the fourth satellite location on all available satellite tuners. Note that these receivers identify the DISH 1000.2 as **SW21 4-Sat** in this configuration, which is OK.



**DISH Pro/DISH Pro Plus
Installation Summary**



**Legacy
Installation Summary**

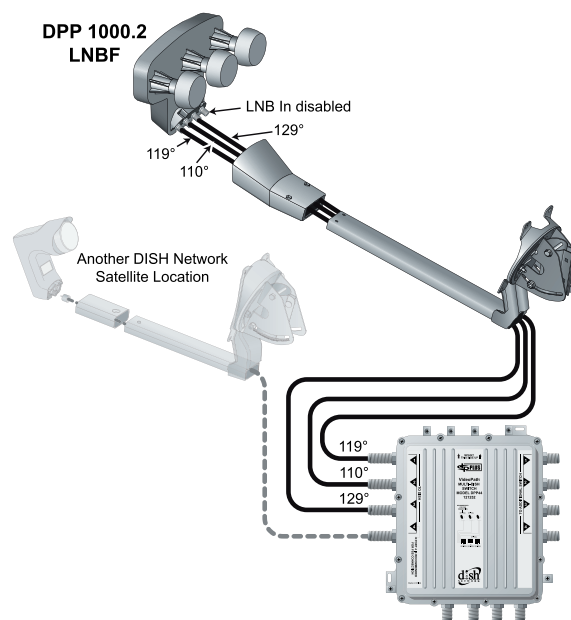
Note: Legacy receiver models 1000, 2000, 3000, 4000, 5000, 7100, 7200 and JVC-DVHS (IRR) may not detect and will not support signals from DISH Network bandstacked FSS LNBFs or 129°, and will not support a fourth satellite location connected to the **LNB IN** port.

Connecting to a Switch

Connecting the DPP 1000.2 LNBF to a DPP44 Switch

The DPP 1000.2 LNBF can be connected to provide 119°W, 110°W and 129°W satellite signals to a DISH Pro Plus 44 switch. Refer to the instructions provided with the switch for additional considerations and instructions. Signal for a fourth satellite location must be provided directly from the fourth satellite location's LNBF to the DPP switch. The **LNB In** port on the DPP 1000.2 LNBF must not be connected. In this installation, the DPP 1000.2 LNBF defaults to the following settings:

- **PORT 1**—119°W
- **PORT 2**—110°W
- **PORT 3**—129°W
- **LNB In**—Disabled when DPP 1000.2 LNBF is connected to a switch. When connected to a switch, any LNBF connected to the **LNB In** port must be disconnected from the DPP 1000.2 LNBF and connected directly to the switch.

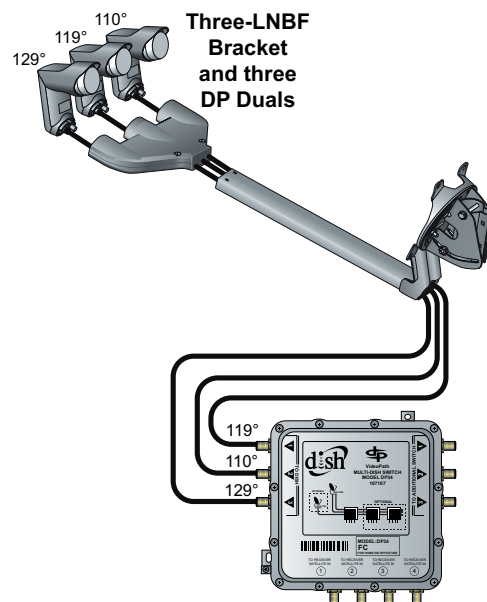


Note: The DPP 1000.2 LNBF is NOT compatible with DISH Pro switches in any installation.

Connecting three DP Dual (or DP Single) LNBFs to a Switch when using the Three-LNBF Bracket

When using the Three-LNBF Bracket on the DISH 1000.2 with three DP Dual (or DP Single) LNBFs, the LNBFs must be connected to a switch to provide 119°W, 110°W and 129°W to the installed receivers. Follow the LNBF and switch installation instructions for additional considerations.

Note: Legacy LNBFs and switches can be used with the Three-LNBF Bracket. Follow all instructions for that equipment if you choose to use Legacy LNBFs and switches.



Dish Pointing Angles

Use the tables below as follows:

1. Find the ZIP code for your location.
2. Find the row that contains the ZIP code or the first three digits of the ZIP code. For example, the correct row for ZIP code 80112 is 801XX.
3. Write down the number in the AZ column in the “Azimuth” blank on page 3.
4. Write down the number in the EL column in the “Elevation” blank on page 3.
5. Write down the number in the SK column in the “Skew” blank on page 3.

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
00001	118	15	71	00058	165	45	90	00161	214	28	113	00206	167	48	90
00002	121	12	78	00065	162	43	88	00164	205	29	109	00214	165	49	89
00003	118	17	69	00087	243	36	139	00165	207	29	110	00215	165	49	89
00004	121	16	73	00097	243	38	142	00166	207	29	110	00216	166	49	90
00006	122	15	76	00116	221	44	128	00168	255	20	127	00217	167	47	91
00007	117	9	78	00119	224	43	130	00169	255	20	127	00218	161	43	88
00008	141	26	83	00120	224	43	130	00170	254	20	126	00219	191	42	107
00010	116	11	71	00124	221	42	127	00172	255	20	127	00222	240	36	137
00011	122	17	74	00125	257	17	125	00173	255	20	127	00223	243	37	141
00013	163	44	89	00126	256	19	126	00174	255	20	127	00225	243	36	139
00019	162	42	89	00127	259	18	128	00176	255	20	127	00226	244	38	142
00020	165	45	90	00128	254	19	126	00177	255	20	127	00228	244	37	142
00022	157	43	85	00130	258	18	127	00179	255	20	127	00229	240	36	137
00025	161	41	89	00132	257	18	126	00180	255	20	127	00232	240	38	139
00028	161	43	88	00133	256	19	126	00181	254	20	127	00234	244	37	141
00031	163	47	88	00134	259	18	128	00182	254	20	127	00236	168	39	93
00032	165	48	89	00135	257	18	126	00183	255	20	127	00238	222	42	128
00033	163	43	89	00136	258	18	126	00184	255	20	127	00241	213	28	112
00034	157	41	86	00137	259	17	126	00185	254	20	127	00243	227	41	130
00035	160	41	88	00138	259	17	127	00186	254	20	126	00246	175	34	97
00037	158	42	86	00139	255	19	127	00187	254	20	126	00250	190	45	107
00038	160	42	87	00140	256	19	127	00188	213	49	125	00252	191	48	108
00039	157	42	86	00141	259	18	127	00189	213	49	124	00255	206	43	116
00040	165	45	90	00145	256	19	127	00190	254	20	126	00257	156	38	86
00044	163	44	90	00147	256	19	127	00191	254	20	126	00258	158	38	87
00047	160	43	87	00148	259	17	126	00192	254	20	126	00259	159	40	87
00048	159	43	86	00151	260	17	128	00195	154	36	86	00260	158	37	88
00049	157	41	85	00152	248	26	131	00198	122	16	75	00266	178	42	99
00050	157	41	85	00155	246	27	131	00199	180	50	100	00267	158	33	88
00051	163	44	89	00156	246	27	130	00200	179	51	100	00268	161	36	90
00052	163	44	89	00157	246	27	130	00201	183	50	103	00270	159	36	89
00054	157	41	85	00159	254	21	130	00203	167	47	91	00276	177	37	98
00055	157	41	86	00160	216	28	113	00205	166	46	91	00277	159	33	89

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
00278	158	38	87	033XX	254	21	128	072XX	250	24	129	121XX	250	23	127
00279	177	37	98	034XX	252	21	128	073XX	250	24	129	122XX	250	23	127
00280	163	44	89	035XX	254	20	127	074XX	249	24	129	123XX	250	23	127
00281	177	40	99	036XX	252	21	128	075XX	250	24	129	124XX	249	23	128
00282	178	40	99	037XX	253	21	127	076XX	250	24	129	125XX	250	23	128
00283	238	27	125	038XX	254	20	128	077XX	250	24	129	126XX	249	23	128
00284	252	20	126	039XX	255	20	128	078XX	248	24	129	127XX	249	24	128
00285	250	24	129	040XX	255	20	128	079XX	249	24	129	128XX	250	22	127
00286	245	30	133	041XX	256	20	128	080XX	248	25	130	129XX	250	22	125
00401	250	24	129	042XX	255	20	127	081XX	248	25	129	130XX	246	24	126
00501	252	23	130	043XX	257	19	128	082XX	249	25	130	131XX	245	24	126
00544	252	23	130	044XX	259	18	127	083XX	248	25	130	132XX	246	24	126
006XX	268	27	157	045XX	256	19	128	084XX	249	25	130	133XX	247	23	126
007XX	268	27	157	046XX	259	18	128	085XX	248	25	129	134XX	247	23	126
008XX	270	26	158	047XX	259	17	126	086XX	248	25	129	135XX	247	23	126
009XX	268	27	157	048XX	258	19	128	087XX	249	24	130	136XX	248	23	125
010XX	252	22	128	049XX	257	19	127	088XX	248	24	129	137XX	247	24	127
011XX	252	22	128	050XX	253	21	127	089XX	248	24	129	138XX	246	24	127
012XX	251	22	128	051XX	252	22	127	100XX	250	24	129	139XX	246	24	127
013XX	252	22	128	052XX	251	22	127	101XX	250	24	129	140XX	241	26	125
014XX	253	21	128	053XX	252	22	128	102XX	250	24	129	141XX	241	26	125
015XX	253	22	129	054XX	252	21	126	103XX	250	24	129	142XX	241	26	125
016XX	253	22	129	055XX	254	21	129	104XX	250	24	129	143XX	241	26	124
017XX	254	21	129	056XX	252	21	126	105XX	250	23	129	144XX	243	25	125
018XX	254	21	129	057XX	251	22	127	106XX	250	24	129	145XX	243	25	125
019XX	255	21	129	058XX	253	20	126	107XX	250	24	129	146XX	243	25	125
020XX	255	21	129	059XX	254	20	126	108XX	250	24	129	147XX	241	26	125
021XX	255	21	129	060XX	251	22	129	109XX	252	24	129	148XX	244	25	126
022XX	255	21	129	061XX	251	22	129	110XX	250	24	129	149XX	244	25	126
023XX	255	21	129	062XX	253	22	129	111XX	250	24	129	150XX	239	28	126
024XX	255	21	129	063XX	253	22	129	112XX	250	24	129	151XX	239	28	126
025XX	255	21	130	064XX	252	23	129	113XX	250	24	129	152XX	239	28	126
026XX	256	21	130	065XX	251	23	129	114XX	250	24	129	153XX	239	28	126
027XX	254	21	129	066XX	251	23	129	115XX	250	24	129	154XX	240	28	127
028XX	254	22	129	067XX	251	23	129	116XX	250	24	129	155XX	241	28	127
029XX	254	22	129	068XX	251	23	129	117XX	250	23	129	156XX	240	28	127
030XX	254	21	128	069XX	250	23	129	118XX	250	24	129	157XX	241	27	126
031XX	254	21	128	070XX	250	24	129	119XX	252	23	130	158XX	241	27	126
032XX	254	21	127	071XX	250	24	129	120XX	250	23	127	159XX	241	27	127

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
160XX	239	28	126	199XX	247	26	130	239XX	243	29	130	279XX	246	28	133
161XX	238	28	125	200XX	245	27	129	240XX	240	30	129	280XX	238	32	131
162XX	240	27	126	201XX	244	27	129	241XX	240	30	129	281XX	239	32	131
163XX	240	27	125	202XX	245	27	129	242XX	236	32	128	282XX	238	32	131
164XX	238	27	125	203XX	245	27	129	243XX	238	31	129	283XX	242	31	132
165XX	238	27	125	204XX	245	27	129	244XX	241	29	129	284XX	244	31	133
166XX	242	27	127	205XX	245	27	129	245XX	241	30	130	285XX	245	29	133
167XX	242	26	126	206XX	245	27	130	246XX	236	31	128	286XX	237	32	130
168XX	243	26	127	207XX	245	27	129	247XX	238	31	128	287XX	235	33	129
169XX	244	25	126	208XX	245	27	129	248XX	237	31	128	288XX	235	33	129
170XX	244	26	128	209XX	245	27	129	249XX	239	30	128	289XX	233	34	129
171XX	244	26	128	210XX	245	26	129	250XX	237	30	127	290XX	239	33	132
172XX	244	27	128	211XX	245	26	129	251XX	237	30	127	291XX	239	33	132
173XX	244	26	128	212XX	245	26	129	252XX	237	30	127	292XX	239	33	132
174XX	245	26	128	214XX	245	27	130	253XX	237	30	127	293XX	237	33	130
175XX	246	26	129	215XX	242	28	128	254XX	243	27	128	294XX	241	33	134
176XX	246	26	129	216XX	247	26	130	255XX	235	31	127	295XX	242	32	133
177XX	245	26	127	217XX	244	27	129	256XX	236	31	127	296XX	236	34	130
178XX	245	26	128	218XX	248	26	131	257XX	235	31	127	297XX	238	32	131
179XX	246	25	128	219XX	247	26	129	258XX	237	31	128	298XX	238	34	132
180XX	247	25	128	220XX	244	27	129	259XX	238	30	128	299XX	240	34	134
181XX	247	25	129	221XX	244	27	129	260XX	238	29	126	300XX	233	35	130
182XX	247	25	128	222XX	245	27	129	261XX	237	30	127	301XX	232	36	129
183XX	247	24	128	223XX	245	27	129	262XX	239	29	128	302XX	233	36	130
184XX	247	24	128	224XX	245	28	130	263XX	238	29	127	303XX	233	35	130
185XX	247	25	128	225XX	245	28	130	264XX	238	29	127	304XX	238	35	133
186XX	247	25	128	226XX	243	28	129	265XX	239	29	127	305XX	234	34	130
187XX	247	25	128	227XX	243	28	129	266XX	238	30	128	306XX	235	35	131
188XX	246	25	127	228XX	241	28	129	267XX	241	28	128	307XX	231	35	128
189XX	248	25	129	229XX	242	29	129	268XX	241	28	128	308XX	237	34	132
190XX	248	25	129	230XX	245	28	131	270XX	239	31	130	309XX	237	34	132
191XX	248	25	129	231XX	245	28	131	271XX	239	31	130	310XX	235	36	132
192XX	248	25	129	232XX	244	28	130	272XX	241	31	131	311XX	233	35	130
193XX	247	26	129	233XX	247	27	131	273XX	241	31	131	312XX	235	35	131
194XX	248	25	129	234XX	247	27	132	274XX	241	31	131	313XX	239	34	134
195XX	246	25	128	235XX	247	28	132	275XX	242	30	132	314XX	239	34	134
196XX	246	25	129	236XX	246	28	132	276XX	242	30	132	315XX	238	35	134
197XX	247	26	129	237XX	247	28	132	277XX	242	30	131	316XX	237	36	134
198XX	247	26	129	238XX	245	28	131	278XX	244	29	132	317XX	235	37	133

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
318XX	233	36	131	363XX	232	38	132	402XX	228	33	125	444XX	237	28	125
319XX	233	37	131	364XX	229	39	130	403XX	232	32	126	445XX	238	28	125
320XX	239	36	135	365XX	228	40	130	404XX	231	33	126	446XX	237	29	125
321XX	240	36	137	366XX	228	40	130	405XX	231	32	126	447XX	237	29	125
322XX	240	36	136	367XX	228	38	129	406XX	230	33	125	448XX	234	29	124
323XX	235	38	134	368XX	232	37	130	407XX	232	33	127	449XX	234	29	124
324XX	233	38	133	369XX	227	39	129	408XX	234	32	128	450XX	231	31	124
325XX	230	40	131	370XX	227	35	126	409XX	233	33	127	451XX	232	31	125
326XX	239	37	136	371XX	228	35	126	410XX	232	32	125	452XX	231	32	125
327XX	241	36	138	372XX	228	35	126	411XX	234	31	126	453XX	231	31	124
328XX	241	36	138	373XX	231	35	128	412XX	235	31	127	454XX	231	31	124
329XX	243	36	139	374XX	231	35	128	413XX	233	32	127	455XX	231	31	124
330XX	244	37	142	375XX	222	38	124	414XX	233	32	127	456XX	234	31	126
331XX	244	37	142	376XX	236	32	129	415XX	235	31	128	457XX	236	30	126
332XX	244	37	142	377XX	233	33	128	416XX	235	32	127	458XX	231	30	123
333XX	244	37	141	378XX	233	33	128	417XX	234	32	127	459XX	231	32	125
334XX	244	37	141	379XX	233	34	128	418XX	234	32	127	460XX	227	32	123
335XX	240	37	138	380XX	223	37	124	420XX	224	36	124	461XX	227	32	123
336XX	240	38	138	381XX	222	38	124	421XX	229	34	126	462XX	227	32	123
337XX	239	38	138	382XX	223	36	124	422XX	227	35	125	463XX	225	31	121
338XX	241	37	138	383XX	224	37	125	423XX	226	34	124	464XX	225	31	120
339XX	241	38	140	384XX	226	36	126	424XX	225	35	124	465XX	227	31	121
342XX	240	38	138	385XX	230	34	127	425XX	231	33	126	466XX	227	31	121
344XX	239	37	137	386XX	222	38	125	426XX	231	34	127	467XX	228	31	122
346XX	239	38	137	387XX	222	40	125	427XX	229	34	125	468XX	228	31	122
347XX	240	37	138	388XX	225	38	126	430XX	233	30	125	469XX	228	31	122
349XX	244	36	140	389XX	222	39	125	431XX	234	30	125	470XX	230	32	124
350XX	228	37	128	390XX	223	40	127	432XX	233	30	125	471XX	228	33	124
351XX	228	37	128	391XX	223	40	127	433XX	233	30	124	472XX	228	32	124
352XX	228	37	128	392XX	223	40	127	434XX	234	29	123	473XX	229	31	123
354XX	227	38	128	393XX	226	39	128	435XX	231	30	123	474XX	227	33	123
355XX	227	37	127	394XX	225	41	129	436XX	232	29	123	475XX	226	34	123
356XX	227	37	127	395XX	226	41	130	437XX	236	29	126	476XX	226	34	123
357XX	229	36	127	396XX	223	41	127	438XX	235	29	125	477XX	225	34	123
358XX	229	36	127	397XX	225	39	127	439XX	237	29	126	478XX	225	33	122
359XX	230	36	128	398XX	236	37	133	440XX	236	28	124	479XX	226	32	122
360XX	231	38	130	399XX	233	35	130	441XX	236	28	124	480XX	233	28	122
361XX	230	38	130	400XX	230	33	125	442XX	236	28	125	481XX	232	29	122
362XX	230	36	129	401XX	228	34	125	443XX	236	28	125	482XX	233	28	123

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
483XX	233	28	122	525XX	214	35	117	570XX	204	34	111	613XX	221	33	119
484XX	232	28	122	526XX	216	34	118	571XX	205	34	112	614XX	219	34	119
485XX	232	28	122	527XX	218	33	118	572XX	204	33	110	615XX	220	33	119
486XX	230	28	120	528XX	218	33	118	573XX	202	35	110	616XX	221	33	119
487XX	232	28	121	530XX	222	30	118	574XX	199	33	109	617XX	222	33	120
488XX	230	29	121	531XX	222	31	119	575XX	197	35	108	618XX	224	33	121
489XX	230	29	121	532XX	222	31	119	576XX	194	34	107	619XX	223	33	121
490XX	228	30	121	534XX	224	31	119	577XX	191	36	106	620XX	220	35	121
491XX	227	31	121	535XX	219	32	118	580XX	202	31	109	622XX	221	35	121
492XX	231	29	122	537XX	220	31	118	581XX	203	31	109	623XX	217	35	119
493XX	228	29	120	538XX	217	32	117	582XX	201	30	108	624XX	223	34	122
494XX	226	30	120	539XX	219	31	117	583XX	198	31	107	625XX	222	34	121
495XX	228	29	120	540XX	213	31	114	584XX	199	32	108	626XX	220	34	120
496XX	227	28	119	541XX	222	29	117	585XX	194	33	106	627XX	220	34	120
497XX	230	27	119	542XX	223	29	118	586XX	191	33	105	628XX	223	35	122
498XX	224	28	117	543XX	223	29	117	587XX	193	31	105	629XX	223	36	123
499XX	221	28	115	544XX	218	30	116	588XX	189	32	103	630XX	219	36	121
500XX	211	35	115	545XX	218	29	115	590XX	181	35	100	631XX	220	35	121
501XX	212	34	116	546XX	217	31	116	591XX	181	36	100	633XX	218	36	120
502XX	211	34	116	547XX	215	31	115	592XX	185	32	102	634XX	216	35	118
503XX	211	35	116	548XX	215	30	114	593XX	186	34	103	635XX	214	35	117
504XX	212	33	115	549XX	221	30	117	594XX	175	34	97	636XX	219	36	121
505XX	210	34	114	550XX	212	31	114	595XX	177	33	99	637XX	221	36	122
506XX	213	33	116	551XX	211	31	113	596XX	174	35	97	638XX	222	37	123
507XX	215	33	116	553XX	210	32	113	597XX	174	36	97	639XX	220	37	122
508XX	210	36	115	554XX	211	31	113	598XX	170	35	95	640XX	212	37	117
509XX	211	35	116	555XX	210	32	113	599XX	169	34	94	641XX	211	37	117
510XX	206	35	113	556XX	216	28	113	600XX	223	31	119	644XX	210	36	116
511XX	206	35	113	557XX	212	29	112	601XX	223	32	119	645XX	210	37	116
512XX	206	34	112	558XX	213	29	113	602XX	223	31	120	646XX	212	36	117
513XX	208	34	113	559XX	214	32	115	603XX	223	31	120	647XX	211	38	118
514XX	208	35	114	560XX	210	33	114	604XX	223	32	120	648XX	212	39	119
515XX	208	36	114	561XX	207	33	112	605XX	223	32	120	649XX	211	37	117
516XX	209	36	115	562XX	206	32	112	606XX	223	31	120	650XX	216	37	119
520XX	217	33	117	563XX	208	31	112	607XX	223	31	120	651XX	216	37	119
521XX	215	32	116	564XX	208	31	111	609XX	223	32	121	652XX	215	36	119
522XX	216	33	117	565XX	204	31	110	610XX	220	32	118	653XX	213	37	118
523XX	216	33	117	566XX	208	29	111	611XX	220	32	119	654XX	217	37	120
524XX	216	33	117	567XX	203	30	109	612XX	218	33	118	655XX	217	37	120

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
656XX	214	38	120	705XX	220	43	127	748XX	209	42	118	788XX	206	49	119
657XX	215	38	120	706XX	219	44	126	749XX	213	41	120	789XX	212	46	123
658XX	214	38	119	707XX	222	42	128	750XX	210	44	120	790XX	199	44	113
660XX	210	38	116	708XX	222	42	128	751XX	211	44	120	791XX	199	44	112
661XX	210	37	117	710XX	217	42	124	752XX	210	44	120	792XX	202	44	114
662XX	210	37	117	711XX	216	42	123	753XX	210	44	120	793XX	199	46	113
664XX	207	38	115	712XX	220	41	125	754XX	211	43	120	794XX	200	46	113
665XX	207	38	115	713XX	220	42	126	755XX	214	42	122	795XX	204	46	116
666XX	209	38	116	714XX	218	43	125	756XX	215	43	122	796XX	204	46	117
667XX	211	39	117	716XX	219	40	124	757XX	213	44	122	797XX	200	48	114
668XX	208	39	116	717XX	217	41	123	758XX	213	44	122	798XX	196	50	112
669XX	204	38	113	718XX	215	41	122	759XX	216	44	124	799XX	192	49	109
670XX	205	40	115	719XX	216	41	122	760XX	209	44	119	800XX	190	41	106
671XX	205	40	115	720XX	218	39	123	761XX	209	44	119	801XX	191	41	107
672XX	206	40	115	721XX	218	39	123	762XX	208	44	119	802XX	190	41	106
673XX	209	39	117	722XX	218	40	122	763XX	206	44	117	803XX	190	41	106
674XX	205	39	114	723XX	221	38	124	764XX	207	45	118	804XX	188	41	105
675XX	202	40	113	724XX	220	38	123	765XX	210	46	121	805XX	190	40	106
676XX	201	39	112	725XX	218	38	122	766XX	210	45	121	806XX	191	40	106
677XX	198	40	110	726XX	215	39	121	767XX	210	45	121	807XX	194	39	108
678XX	199	41	112	727XX	213	40	120	768XX	206	47	118	808XX	193	41	108
679XX	198	42	111	728XX	215	40	121	769XX	204	47	117	809XX	191	42	107
680XX	206	36	113	729XX	213	40	120	770XX	215	46	124	810XX	194	42	108
681XX	207	36	114	730XX	207	42	117	772XX	215	46	124	811XX	189	43	106
683XX	206	37	114	731XX	207	42	117	773XX	215	45	124	812XX	189	42	106
684XX	206	37	114	733XX	210	47	121	774XX	214	46	124	813XX	185	44	103
685XX	206	37	114	734XX	209	43	118	775XX	216	46	125	814XX	185	43	104
686XX	204	36	112	735XX	206	43	116	776XX	217	45	125	815XX	183	42	103
687XX	203	36	112	736XX	203	43	115	777XX	217	45	125	816XX	186	41	104
688XX	201	37	111	737XX	205	41	115	778XX	213	46	122	820XX	190	39	105
689XX	201	38	112	738XX	202	42	114	779XX	212	47	123	821XX	177	37	99
690XX	198	39	110	739XX	198	42	112	780XX	209	48	121	822XX	190	38	105
691XX	196	38	109	740XX	209	41	117	781XX	210	48	122	823XX	185	39	103
692XX	197	37	109	741XX	209	41	118	782XX	209	48	121	824XX	181	37	101
693XX	192	38	107	743XX	211	40	118	783XX	212	49	124	825XX	181	38	101
700XX	225	42	129	744XX	211	41	119	784XX	213	49	124	826XX	186	38	103
701XX	225	42	129	745XX	211	42	119	785XX	213	50	125	827XX	188	36	104
703XX	223	43	129	746XX	208	41	116	786XX	210	47	121	828XX	184	36	102
704XX	224	42	129	747XX	212	42	120	787XX	210	47	121	829XX	180	40	100

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
830XX	177	38	99	882XX	196	47	112	930XX	167	49	91	975XX	157	40	86
831XX	179	39	99	883XX	193	47	109	931XX	166	49	90	976XX	161	40	88
832XX	175	39	97	884XX	195	44	110	932XX	165	47	90	977XX	161	39	89
833XX	171	39	95	885XX	192	49	109	933XX	167	48	91	978XX	163	37	91
834XX	175	38	97	889XX	173	47	95	934XX	163	48	89	979XX	166	38	92
835XX	166	36	93	890XX	172	46	95	935XX	168	48	92	980XX	157	35	88
836XX	167	38	93	891XX	173	47	96	936XX	165	46	90	981XX	156	34	87
837XX	168	39	93	893XX	171	43	95	937XX	165	46	90	982XX	156	34	88
838XX	166	34	93	894XX	165	43	91	938XX	165	46	90	983XX	156	35	87
840XX	178	41	99	895XX	164	43	90	939XX	162	46	87	984XX	156	35	87
841XX	177	41	98	897XX	164	44	90	940XX	160	45	87	985XX	155	35	87
842XX	176	41	98	898XX	170	41	94	941XX	159	45	86	986XX	157	36	87
843XX	176	40	98	900XX	168	49	92	942XX	161	44	88	988XX	160	34	90
844XX	176	41	98	902XX	168	49	92	943XX	160	45	87	989XX	160	36	89
845XX	181	43	101	903XX	168	49	92	944XX	160	45	87	990XX	164	34	92
846XX	177	43	99	904XX	168	49	91	945XX	160	45	87	991XX	163	34	91
847XX	177	45	98	905XX	168	49	92	946XX	160	45	87	992XX	164	34	92
850XX	181	49	100	906XX	168	49	92	947XX	160	45	87	993XX	162	36	91
852XX	181	49	101	907XX	168	49	92	948XX	160	45	87	994XX	165	36	92
853XX	178	49	99	908XX	168	49	92	949XX	159	45	86	995XX	119	15	71
855XX	184	49	103	910XX	168	49	92	950XX	161	46	87	996XX	118	15	71
856XX	184	50	103	911XX	168	49	92	951XX	160	46	87	997XX	119	11	76
857XX	183	50	103	912XX	168	49	92	952XX	162	45	88	998XX	136	22	81
859XX	184	48	103	913XX	168	49	91	953XX	163	45	89	999XX	139	25	82
860XX	180	47	101	914XX	168	49	91	954XX	159	44	86				
863XX	179	48	100	915XX	168	49	92	955XX	157	42	85				
864XX	176	47	97	916XX	168	49	92	956XX	161	44	88				
865XX	184	46	103	917XX	169	49	92	957XX	162	44	88				
870XX	189	46	107	918XX	168	49	92	958XX	161	44	88				
871XX	190	46	107	919XX	172	51	94	959XX	161	43	88				
872XX	190	46	107	920XX	171	50	93	960XX	159	42	87				
873XX	186	46	104	921XX	171	50	93	961XX	163	43	89				
874XX	186	45	104	922XX	173	49	95	967XX	101	41	33				
875XX	190	45	107	923XX	170	49	93	968XX	100	40	33				
877XX	192	44	108	924XX	170	49	93	970XX	157	37	87				
878XX	189	47	106	925XX	170	49	93	971XX	156	37	86				
879XX	190	48	107	926XX	169	49	92	972XX	157	37	87				
880XX	189	49	107	927XX	169	49	92	973XX	156	37	86				
881XX	196	46	111	928XX	169	49	92	974XX	156	39	86				

Radio Interference

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

Modifying this receiver may void your authority to use the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

If none of the remedies stops the radio interference, you should contact a licensed radio/television technician, your satellite dealer or call the Customer Service Center at 1-800-333-3474, for assistance.

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