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1.0 *Introduction*

TBD

1.1 Site Survey, Planning and Design

1.1.1 Overview

The telemetry system for the Panorama Central Monitoring System consists of the following major components:

- Instrument and Ambulatory Transceivers
- Active Antennas
- Coaxial Cable and RF Splitters
- TIM Transceiver
- Panorama Telemetry Server
- Panorama Central Station

System components will be installed on a full height equipment rack, which should be installed in a secure, climate-controlled area.

The antenna system for the Panorama WMTS telemetry is a diversity system. It operates in the 608-614 and 1400 MHz VHF bands. The system receives information from patients in the 608-614 MHz band - the 'uplink'- and transmits information to patients in the 1400 MHz band (1395-1400 MHz or 1427-1429.5 MHz) - the 'downlink'.

The system will include active antennas, Belden 1695A and/or Belden 7732A co-axial cable, 2/1 RF splitters, a telemetry receiver, and a wireless server. This system will interface to the Panorama Central Station via a 100 MB Ethernet connection.

The active antennas provide the amplification required to offset the cable and splitter losses. There are separate settings to set uplink and downlink amplification.

The active antennas operate on 9 volt DC power provided by the wireless transceiver via the center conductor of the coaxial cable.

1.2 Site Survey, Planning and Design

1.2.1 Tools and Equipment Required

- Test Telepack (P/N 0454-00-0037-XX)
- RF Attenuators (P/N 0454-00-0038-XX)
- Active Antenna (P/N 0998-00-0200)
- External power adapter for active antenna
  - Modified 2/1 RF Splitter
  - Male BNC to Female RCA adapter
  - Male RCA plug
  - 9V battery clip
  - 9V Lithium battery
- 3 meter RG6 coax cable
- 1 meter RG6 coax cable
- Flexible antenna (P/N 0992-00-1003)
- N male to SMA female adapter (P/N 0454-00-0039-02)
- 100 ft. tape measure or measuring wheel
- Site survey forms
  - Pre-installation Survey Form
  - Wire Run List
  - Antenna Components List
- Legible, scaled floor plan of areas to be covered by the Telemetry System
- Spectrum analyzer

1.2.1.1 Off-Site

Planning and Design

- Determine the locations of the central stations and the equipment closet(s). Mark the scaled floor plan with all component locations and the areas of coverage.
- Draw an antenna schematic, including all components and approximate cable lengths.
- Compute all the wiring runs and attempt to minimize cable length. It is not necessary to balance cable lengths because each leg of the antenna system can be different cable lengths.

Determine the cumulative dB loss of each leg of the antenna system.

Belden 1695A cable	5.5 dB per 100 ft @ 608 MHZ
Belden 7732A cable	4 dB per 100 ft @ 608 MHZ
2/1 Splitter	5.7 dB @ 608 MHz (P/N 0670-00-0748-01)
Low Loss 2/1 Splitter	3.5 dB @ 608 MHZ (P/N 0992-00-0199-01)

NOTE: **No more than 28 dB loss @ 608 MHZ or 35 dB loss @ 1400 MHz can be tolerated in any leg of the antenna system.**

- Using the floor plan, determine the optimum location for all antennas required to cover the specified areas within the hospital.

Main Branch "A"

In areas where full diversity coverage cannot be achieved, follow these instructions:

- Starting at the outer edges of the coverage area, layout a circle with a 30' radius, covering the far corners of these areas.

In areas with full diversity coverage, follow these instructions:

- Use circles of a 45' radius to represent each antenna's coverage area. Continue to draw a pattern of circles to cover the remaining area. The outer edges of each circle must touch, and may overlap.

Diversity Branch "B"

The locations where the circles intersect will be the approximate locations of the Diversity (B) antennas.

- Do not leave any gaps in the coverage area.
- Because the Panorama uses a diversity antenna system, there are two antenna branches, main (A) and diversity (B). The system is designed to support up to 16 antennas on Branch A, and the same on Branch B. If required, an uneven number of antennas may be used for each branch. For example, 7 Branch A antennas and 6 Branch B antennas.
- Antennas should be evenly distributed throughout the area and must not be co-located. Antennas of the same branch should be at least 60' apart or separated by a structural wall or cabinet, etc. Antennas of the same branch should not be able to 'see' each other.
- At the corners of the covered areas, it may not be possible to get diversity coverage by both antenna branches. In such cases, ensure that where only one antenna covers an area, the distance from the antenna to the corner is 30'.

NOTE: **Antenna locations must be located at least 3 meters away from an exterior "windowed wall".**

NOTE: **No more than 16 antennas can be installed on each RF Branch of the wireless transceiver. If more than 16 pairs of antennas are required, additional wireless transceivers will be required.**

On-site

NOTE: **Site Surveys can only be performed by Datascope personnel.**

1. Complete the Pre-installation Survey form.
2. Using the Spectrum analyzer, determine if any interfering radio frequency signals are present in the following bands.
   - 608 to 614 MHz
   - 1395-1400 MHz
   - 1427-1429.5 MHz

3. Observe each frequency range for approximately 5 minutes in multiple locations within the coverage area. If present, note these frequencies on the survey form.

4. Determine the available quadrants. Enter the available quadrants on the survey form.

5. Program the test transceiver to a frequency in a quadrant that is not in use by other telemetry systems in the facility.

6. Connect a test antenna and antenna power adapter to the Spectrum analyzer.

7. Apply 9V DC power to the antenna adapter. Obtain a reference RF level on the Spectrum analyzer by holding the test transceiver 1 meter from the antenna (shown in FIGURE 1-1).

8. Using that reference measurement as a base line, move to the edges of the antennas coverage area. Verify that the RF loss does not exceed 35 dbm from the reference measurement level in any portion of the antenna's coverage area.

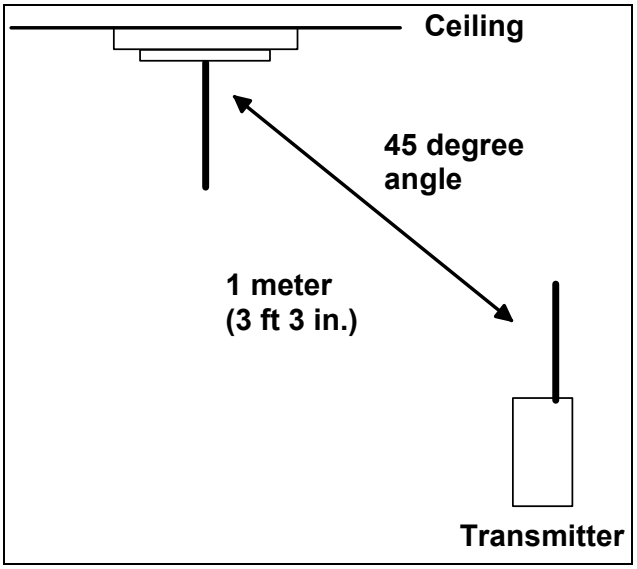

FIGURE 1-1

9. Repeat steps 6-8 for each antenna location.

NOTE: **If the RF signal loss is greater than 35 dbm, the antenna network must be redesigned in order to meet the product specification.**

10. Determine the locations of the central station and the equipment closet. Mark the scaled floor plan with all component locations and the area of coverage. Determine location of chases between floors and drops into the nurses stations, if necessary, and mark them on the floor plan.

11. Draw an antenna schematic, including all components and approximate cable lengths.

12. Measure all the wiring runs in an attempt to minimize cable length.

13. Determine the ceiling type at each antenna and splitter location. Check above the ceiling at each location to determine clearance and accessibility.

14. Determine the cumulative dB loss of each leg of the antenna system by using the following table as a guide:

Belden 1695A cable	5.5 dB per 100 ft @ 608 MHZ
Belden 7732A cable	4 dB per 100 ft @ 608 MHZ
2/1 Splitter	5.7 dB @ 608 MHz (P/N 0998-00-0201)
	3.5 dB @ 608 MHz (P/N 0992-00-0199-01)

NOTE: No more than 28 dB loss @ 608 MHZ can be tolerated in any leg of the antenna system.

15. Create a Wire Run list to include all wire runs for the coax cable.

16. Create an Antenna Components List with all required parts required, i.e. antennas, splitters, connectors.

2.0 *System Installation*

TBD

2.1 Tools and Equipment Required

- Panorama™ Service Manual (P/N 0070-00-0634)
- Laptop computer with 100 MB LAN card
- Battery powered portable drill
- 1¾ inch hole saw
- Phillips screw driver
- Ladder
- Spectrum analyzer
- N male to SMA female adapter (P/N 0454-00-0039-02)
- 2 Flexible antennas (P/N 0992-00-1003)
- Test Telepack (P/N 0454-00-0037-XX)
- RF attenuators (P/N 0454-00-0038-XX)
- SMA male to male adapter cable (P/N 0454-00-0049-XX)
- SMA male to BNC adapter cable (P/N 0454-00-0041-XX)

2.1.1 Installing The Wireless Server

- Install the Panorama Telemetry Server(s) into the rack.
- Place the Panorama Telemetry Server(s) onto the shelf.

Connection of the Panorama Telemetry Server to the TIM Transceiver is via a LVDS (low voltage differential signaling) cable (0012-00-1522-01 -02, or -04).

- The -01 cable is 0.5 meters (1.64 ft).
- The -02 cable is 1.5 meters (4.9 ft).
- The -04 cable is 1 meter (3.28 ft.)

The Panorama Telemetry Server and TIM Transceiver must be located close enough in the rack to be connected by the LVDS cable.

Using FIGURE 2-1 as a reference:

1. Connect one end of the cable to LVDS connector on the wireless server. The primary server should be connected to DS1 on the rear of the wireless transceiver.

NOTE: Additional Servers will connect to the remaining connectors DS2 through DS4 on the rear of the wireless transceiver

2. Connect the keyboard and mouse into their respective ports on the rear of the Wireless Server.
3. Connect the Quad I/O cable and VGA cable into their respective ports on the rear of the Server.
4. Terminate the unused ports on the Quad I/O cable with P/N 0992-00-0135 terminators.
5. Connect an AC Power cord to the Server.
6. Connect the AC cord to the UPS.
7. Connect the VGA cable to the display monitor. Connect the other end of the VGA cable to monitor VGA input 1.
8. Connect an AC Power cord to the display monitor. Connect the AC cord to the UPS.

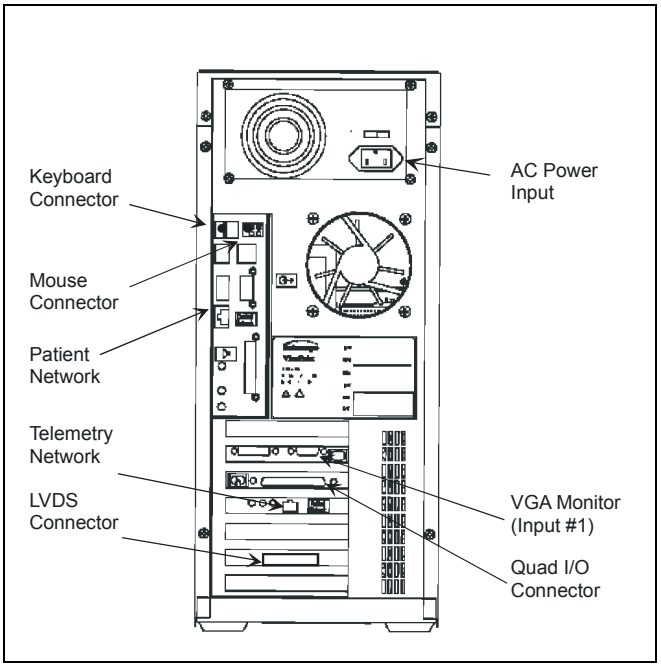

FIGURE 2-1

Local Installation (Server(s) Co-located with Central Station)

Direct connection of the Wireless (Telemetry) Server (P/N 0998-00-0206-01) to the central station is via a crossover CAT5 patch cable (P/N 0012-00-1392-XX).

9. Connect one end of the crossover cable to the Patient Network connector on the rear of the Panorama Server and connect the other end of the crossover cable to the Patient Network connector on the rear of the central station.

Non-direct Connection of the Telemetry Server(s) to the Central Station

Non-direct connection is via a hub or switch on the E-LAN using a CAT5s patch cable (P/N 0012-00-1274-XX).

1. Connect one end of the cable to the connector on the Patient Network connector on the rear of the Server and connect the other end to the E-LAN Hub or Switch.
2. At the central station location, connect a straight through CAT5s patch cable (P/N 0012-00-1274-XX) from the wall plate to the Patient Network connector on the rear of the central station.

Connection of Hardwired Devices to the E-LAN

Connect patch cables from the individual devices to the input ports of the Hub/Switch/patch panel.

2.2 Setting Up the TIM Transceiver

1. Mount the TIM Transceiver to the equipment rack with four screws.
2. Connect the AC line cord to the rear of the transceiver.
3. Plug the line cord into an outlet on the UPS.
4. Connect the LVDS cable coming from the Wireless Server(s) to appropriate LVDS connectors (marked DS1 through DS4) on the rear of the TIM Transceiver (shown in FIGURE 2-2).

NOTE: The "Master Server" must be connected to the port marked DS 1 on the rear of the TIM Transceiver.

NOTE: The interface cable between the Panorama Telemetry Server and the TIM Transceiver is P/N 0012-00-1522-XX (0.5 meter, 1 meter and 1.5 meter in length). Insure the TIM Transceiver is located close enough to the Panorama Telemetry Server to make this connection.

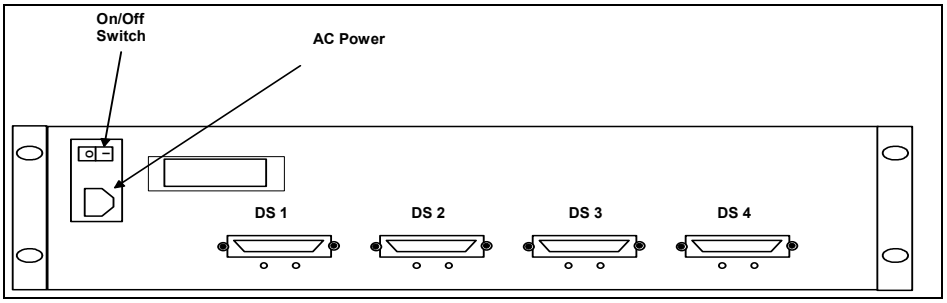

FIGURE 2-2

2.3 Installing the Antenna Network Components

2.3.1 Panorama Active Antenna

1. Remove the locking ring from the antenna.
2. Set all the DIP switches to the minimum gain (maximum attenuation) position (OFF) (shown in FIGURE 2-3).

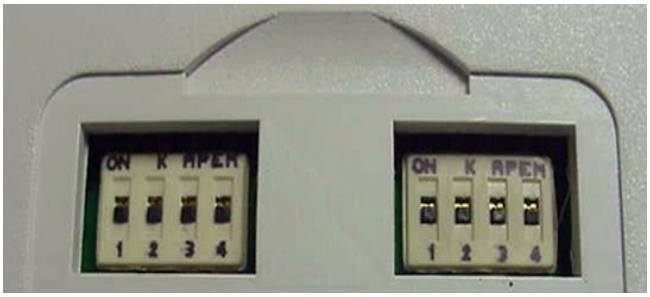

FIGURE 2-3

Installing Above the Ceiling

- Drill a 1¾-inch hole in the center of the ceiling tile where the antenna will be located. Do not secure the antenna to the ceiling at this time.

Installing Below the Ceiling

Depending on the ceiling type and construction, special considerations will need to be made.The antenna module is designed for flush mounting to hard ceilings.

All antenna modules MUST be installed such that the flexible antenna extends below the ceiling grid.

Connect the coax cable to the antenna RF connector. Do not attach the flexible antenna to the antenna module at this time.

2.3.2 RF Splitters

Connect each coax cable to the appropriate port on each splitter.

2.3.3 Connecting the Antenna System to the Wireless Transceiver

Connect the coaxial cable from antenna Main branch (A) to the "A" input on the front of the TIM Transceiver (shown in FIGURE 2-4).

Connect the coaxial cable from antenna Diversity branch (B) to the "B" input on the front of the TIM Transceiver (shown in FIGURE 2-4).

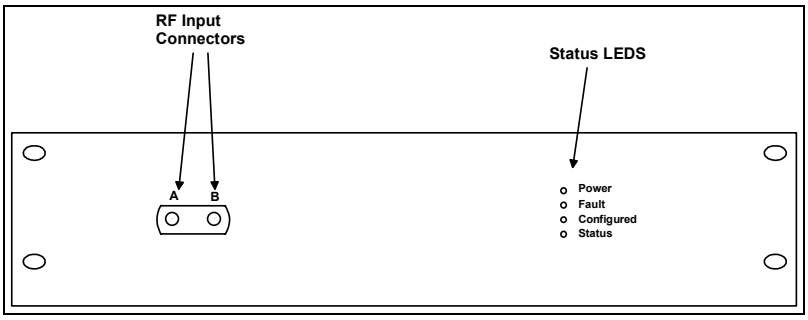
RF Input
Connectors
Status LEDS
A
B
Power
Fault
Configured
Status

FIGURE 2-4

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3.0 *System Configuration*

TBD

3.1 Configuring the Wireless Server

3.1.1 Entering the Wireless Server into the Maintenance Mode

1. Turn on the Wireless Server and Display.

2. Hold down the SHIFT key on the keyboard when the Windows NT banner is displayed on the monitor. Do not release the SHIFT key until the password Logon screen is displayed on the monitor.

NOTE: **The Panorama™ Server will boot into its regular operating mode if no keys are held during the system reboot.**

3. The Login information for the Panorama™ Server's password screen is:

User Name:swadmin

Password: dscpswadmin

NOTE: **If the login information is incorrectly entered, the Windows NT login failure will be displayed. Use lower case letters for the password.**

4. The Panorama™ Wireless Server's Registry Editor dialog box will be displayed if the username/password has been entered correctly. Press the **OK** button to close the Registry Editor dialog box and enter the Panorama™ Server configuration mode.

5. Click on the CB Config Icon. The Panorama Server System Config dialog box will open (shown in FIGURE 3-1).

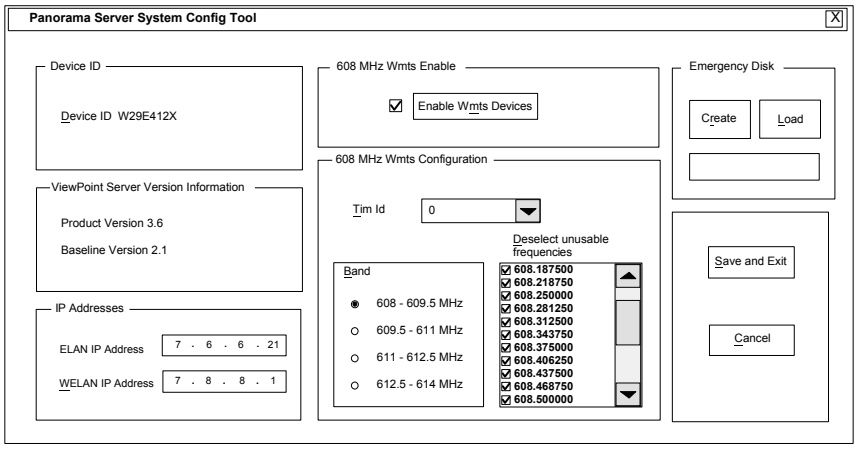

FIGURE 3-1 Panorama Server System Config Dialog Box

3.1.2 Assigning the IP Addresses

ELAN IP Address

Assign the Server an appropriate ELAN IP Address (7.6.6.XXX). Verify that no other device (central station, bedside monitor or wireless server) being assigned to the network has the same ELAN IP Address (default - 7.6.6.21).

WELAN IP Address

Assign the Server an appropriate WELAN IP Address (7.8.8.XXX). Verify that no other device (Telemetry Server, ISM Access Point or ISM Telemetry Radio) being assigned to the network has the same WELAN IP Address. (Default -7.8.8.1)

Device ID

Note the Device ID number. This will be assigned to the equipment list of the central station Tower.

608 MHz WMTS Enable

Enable the WMTS devices by clicking on the check box. Failure to check this box will disable the WMTS configuration.

608 MHz WMTS Configuration

Leave these settings at their default configurations. Changes will be made later in the installation process.

Select the 608 MHz operating band for each Server on the system.

NOTE: Repeat the process for each Server. In order to avoid IP conflicts complete the power up and configuration of one server at a time.

NOTE: The TIM Transceiver ID is always zero with a one TIM configuration regardless of the number of Servers on the system.

Saving the Configuration

After setting these parameters, press the Save and Exit button. After a few seconds, a confirmation window will appear. Press the YES button to save the settings.

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4.0 *Antenna System Calibration*

TBD

4.1 Equipment Required

Test Transceiver	P/N 0454-00-0037-XX
RF Attenuators	P/N 0454-00-0038-XX
SMA to BNC Adapter Cable	P/N 0454-00-0041
SMA-to-SMA Adapter Cable	P/N 0454-00-0050

1. Program the test transceiver to a frequency within a quadrant that is to be used in the installation.
2. Connect the coax cables from the antenna system to the appropriate ports on the TIM Transceiver (main to A and diversity to B).
3. Turn on the TIM Transceiver.
4. Re-boot Server 1 (first Server on the system) into NT screen.
5. Log on to the Server.
6. Double click on the WMTS.exe ICON. The WMTS API Test Utility will open (shown in FIGURE 4-1).

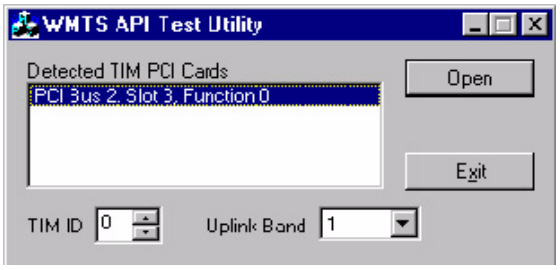

FIGURE 4-1

7. Select the uplink band (quadrant) in which the test transmitter is programmed. The choices are 1, 2, 3, or 4.

8. Right click on the detected TIM PCI card.

9. Select **Open.** The PCI Device Window will open (shown in FIGURE 4-2).

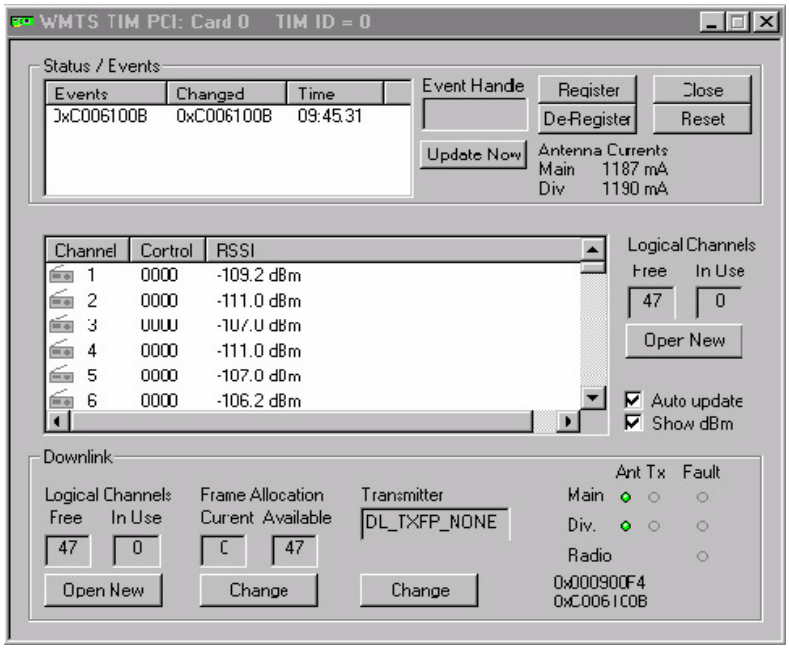

FIGURE 4-2

10. Enable power for the antennas:

11. Click on the change button located under the Transmitter window. Scroll down to and select DL_EN_BOTH_ANT.

12. Verify both the Main and Div Ant "LEDs" are both illuminated.

13. Press the **Update Now** button. Check the antenna current for the main and diversity branches. Each antenna should draw approximately 135 milliamps. Multiply that number by the number antennas connected to each branch. Determine if the appropriate current measurement is displayed. (with no antennas connected the current measurement will be approximately 65 ma.)

14. Scroll down to the channel that corresponds to the frequency of the test transmitter.

4.1.1 Setting a Reference Signal Level

1. Connect the RF attenuator(s) to the SMA connector on the test transceiver.

2. Connect the SMA to BNC adapter (P/N 0454-00-0041-XX) to the test Transceiver.

3. Connect to test transceiver to the Main (A) input connector on the TIM Transceiver.

NOTE: **The signal level (RSSI) displayed for the test transceiver. The signal should not exceed -40 dbm. Add additional attenuators if necessary.**

4.1.2 Antenna Calibration

- Go to each antenna site and verify each antenna's power LED is illuminated. If not, go back to the TIM Transceiver and enable the antenna or trouble shoot any problems.

NOTE: Antenna calibration should always be done using the Main (A) port on the TIM Transceiver.

Main ("A") branch

1. Disconnect the Diversity (B) branch coax cable from the TIM Transceiver.
2. Go to the first antenna to be calibrated on the Main branch. Start with the antenna closest to the TIM Transceiver and work outwards.
3. Use the test transceiver and the same RF attenuator(s) used to set the reference level.
4. Connect the SMA/SMA adapter cable (P/N 0454-00-0050) to the test transceiver.
5. Connect the other end of the SMA/SMA cable to the input SMA connector on the TIM Active antenna.
6. At the Wireless Server, observe the RSSI level displayed for the channel corresponding to the test transceiver.
7. At the antenna site, adjust the uplink DIP switches to the proper gain (shown in FIGURE 4-3). When properly calibrated, the RSSI level for that antenna should match the reference level -1dbm to -3 dbm. For example, if the reference level was -40 dbm, the antenna gain should be -41 to -43 dbm.

NOTE: Do not over-amplify any antenna.

8. Set the downlink DIP switches to the same settings as the uplink switches (shown in FIGURE 4-3).

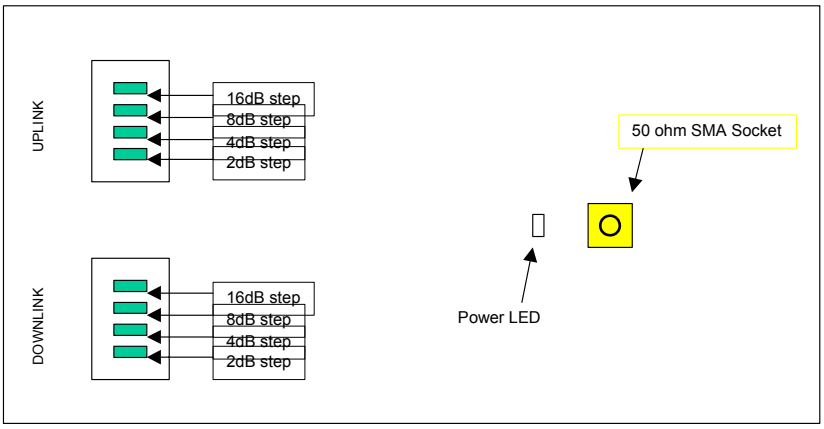

FIGURE 4-3

9. Repeat the above procedure for all antennas being installed.

Diversity ("B") branch

1. Disconnect the Main branch coax cable from "A" connector on the TIM Transceiver.
2. Connect the Diversity (B) branch coax cable to the "A" connector on the TIM Transceiver.
3. Repeat the calibration of the antennas on the Diversity (B) branch.

Determining usable and unusable frequencies.

1. Double click on the WMTS.exe ICON.The WMTS API Test Utility will open.
2. Select the uplink band (quadrant) to be observed. The options are 1, 2, 3, or 4.
3. Right click on the detected TIM PCI card.
4. Select RX monitor. A Spectrum Analyzer like display will open (shown in FIGURE 4-4). The display shows RSSI values for all channels supported by the TIM PCI card on the selected uplink band.
5. Turn off any Test Telepacks or RF transmitting devices. Look for any frequencies that are present. These frequencies will be classified as unusable and must be removed from the list of available frequencies to which transmitters can be assigned.

This step is part of the WMTS configuration located within the CB Configuration menu.

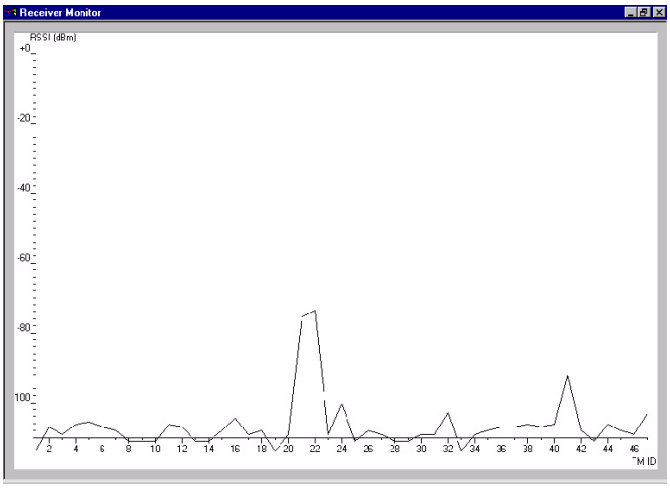

FIGURE 4-4

6. Use the WMTS Channel vs. Frequency cross-reference list shown in the Frequency Cross Reference chapter to determine the actual frequency of each unusable channel.
7. Repeat for each uplink band to be used.

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5.0 *Programming and Configuring Telemetry Devices*

TBD

5.1 Configuring Bedside Monitors for WMTS telemetry

Each bedside monitor being connected via telemetry must be configured to communicate to the radio card.

Enter the Installation Menu on the bedside monitor.

1. Press and hold the Discharge key during power up.
2. Set WMTS Enabled to Yes
3. Save the information by pressing Save Current.
4. Turn off the bedside monitor.

Repeat the above procedure on all bedside monitors being connected via WMTS telemetry.

5.2 Assigning the Telemetry Server(s) to the Equipment List

NOTE: Prior to programming the Telemetry Devices, the Wireless Server(s) must be assigned to the each central station equipment list.

1. Turn on the central station and Displays. Wait for the operating software to start.
2. Press the **System Setup** button.
3. Press the Installation Setup tab.
4. Enter the Password "System".
5. Press the Equipment Setup tab.
6. Press the **New** button.
7. Press **Tile** and select the tile to be assigned: **None** for **VP Server**, then press **Done.**
8. Press **Type** and select the device type to be entered: **VP Server**, then press **Done.**
9. Press **Label** and use the onscreen keyboard to type in a label for that tile. Press the **Enter** key on the keyboard when the label is completed.
10. · Press **Device ID** and enter the Device ID of the VP Server being assigned to that tile.
11. · Press **Done** to complete the Server configuration
12. Repeat this procedure for all Wireless Servers to be assigned to the system.

5.3 Programming Telepacks

Each Telemetry device being connected to the system must be programmed prior to assignment to the system. Programming is of Telepacks is done via the programming cable (P/N 0012-00-1521-01).

NOTE: **In order to put the Telepack into the programming mode, the programming cable must be connected to the serial port on the Telepack prior to applying power to the Telepack. If the connection is broken while applying power to the Telepack, the sequence must be re-done.**

1. Remove the serial port cover from the bottom of the Telepack.
2. Connect the programming cable (P/N 0012-00-1521-01) to the Serial Port on the bottom of the Telepack.
3. Connect the other end of the cable to Serial Port 1 on the Viewpoint (the one farther from the edge, just below the mouse connector)
4. Install two (2) fresh 1.5 V "AA" batteries in the Telepack. Screw on the battery cap.
5. Verify the LA LED illuminates briefly, followed by the RA LED illuminated for approximately 5 seconds.
6. Press the **More** tab.
7. Press the Wireless tab. The Programming Menu will be displayed (shown in FIGURE 5-1).

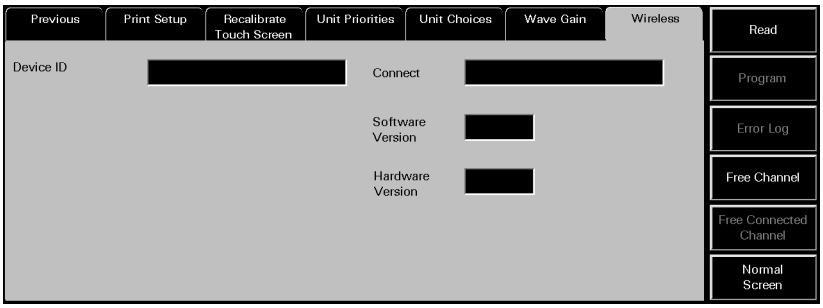

FIGURE 5-1

8. Press the **Read** button. The Device ID, software and hardware versions, and connection status will be displayed in their respective windows. Verify the Device ID matches the ID on the serial number label of the Telepack.

If there is an error message in the Connect Window in the programming menu, check the cabling between the Serial Port 1 on the central station to the programming cable, re-power the Telepack and try again.

9. Press the Program button. A pop-up window will appear asking if you want to program the telemetry device. Press the **Yes** button to program the Telepack.

If the device is programmed successfully, a pop-up window will display:

"Wireless device programmed successfully".

10. Remove the serial cable from the Telepack. Remove the batteries from the Telepack to exit the programming mode

Repeat the same steps for the remaining Telepacks.

5.4 Instrument Radios

NOTE: The radio card is static sensitive. Use proper anti-static measures when handling, programming and installing the radio card.

1. Connect the programming module (P/N 0012-00-1541-01) to the instrument radio card.
2. Connect the external power supply to the programming cable.
3. Press the **Read** button. The Device ID, software and hardware versions, and connection status will be displayed in their respective windows. Record the Device ID number for later reference.

NOTE: If there is an error message in the Connect Window in the programming menu, check the cabling between the Serial port 1 on the Central station to the programming adapter, and try again.

4. Select the desired settings and press the **Program** button. A pop-up window will appear asking if you want to program the telemetry device. Press the **Yes** button to program the Instrument transceiver.

   If the device is programmed successfully, a pop-up window will display:

   "Wireless device programmed successfully".

5. Disconnect the Instrument radio from the programming module.
6. Label the radio card with its ID number and serial number.

Repeat for the remaining Instrument radio cards.

5.5 Assigning Equipment to the Central Station

After being programmed, the Telemetry Devices must be assigned to the central station equipment list. Also, all wireless Servers must also be assigned to the equipment list.

NOTE: Prior to assigning telemetry devices to the system, they must be programmed.

5.5.1 Telemetry Devices

Remain in the System Setup / Installation Setup tab and assign the Telemetry Devices.

1. Press the **New** button.
2. Press **Tile** and select the tile to be assigned: 0 being the first tile, 1 the second tile, etc. Press Select.
3. Press **Type** and select the device type to be entered: i.e. Telepack WMTS
4. Press **Select**.
5. Press **Label** and use the onscreen keyboard to type a label for that tile. Press the **Enter** key on the keyboard when the label is completed.
6. Press **Device ID** and enter the Device ID of the transceiver being assigned to that tile.
7. Press **Done** to complete the assignment for that device.
8. Repeat this procedure for all equipment to be assigned to the system.
9. After the equipment is assigned, press the **Close Menu** button.

Installing the Radio Card Into a Bedside Monitor

1. Remove the blank panel from the upper rear case of the bedside monitor.
2. Follow the instructions (P/N 0065-00-0311) included with the radio card kit to install the radio card.

5.6 Communication verification

Bedside monitor to Wireless server

1. Turn on the bedside monitor. If the radio card is communicating with the Wireless Server, the Server will display "WMTS Translator still communicating" (shown in FIGURE 5-2).

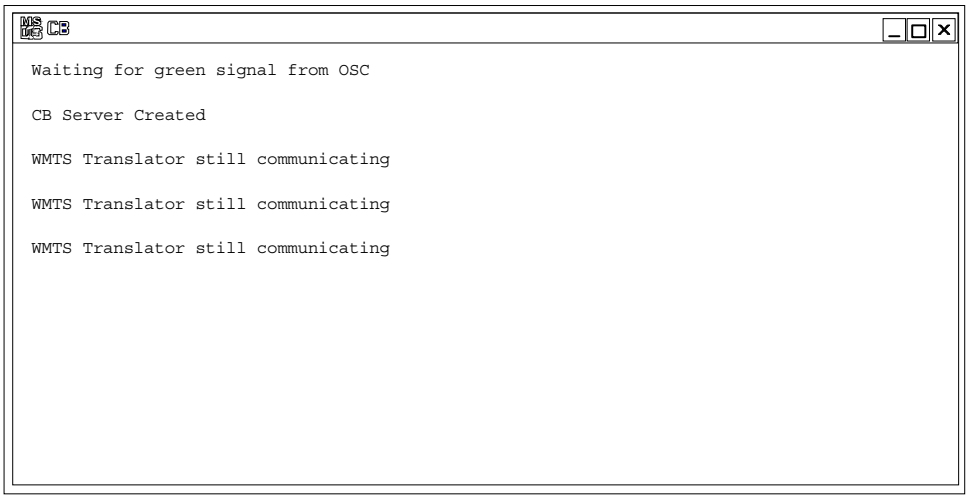

FIGURE 5-2

2. Repeat for each bedside monitor being assigned to the system.

Telepack to Wireless Server

1. Install new batteries into a Telepack. If the Telepack is communicating with the Wireless Server, the Server will display "WMTS Translator still communicating" (shown in FIGURE 5-2).

2. Repeat for each Telepack assigned to the system.

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6.0 *Frequency Cross Reference*

TBD.

Panorama WMTS Channel Frequency Cross Reference

CHAN	1ST QUADRANT FREQUENCY	CHAN	2ND QUADRANT FREQUENCY
1	608.031250	49	609.531250
2	608.062500	50	609.562500
3	608.093750	51	609.593750
4	608.125000	52	609.625000
5	608.156250	53	609.656250
6	608.187500	54	609.687500
7	608.218750	55	609.718750
8	608.250000	56	609.750000
9	608.281250	57	609.781250
10	608.312500	58	609.812500
11	608.343750	59	609.843750
12	608.375000	60	609.875000
13	608.406250	61	609.906250
14	608.437500	62	609.937500
15	608.468750	63	609.968750
16	608.500000	64	610.000000
17	608.531250	65	610.031250
18	608.562500	66	610.062500
19	608.593750	67	610.093750
20	608.625000	68	610.125000
21	608.656250	69	610.156250
22	608.687500	70	610.187500
23	608.718750	71	610.218750
24	608.750000	72	610.250000
25	608.781250	73	610.281250
26	608.812500	74	610.312500
27	608.843750	75	610.343750
28	608.875000	76	610.375000
29	608.906250	77	610.406250
30	608.937500	78	610.437500
31	608.968750	79	610.468750
32	609.000000	80	610.500000
33	609.031250	81	610.531250
34	609.062500	82	610.562500
35	609.093750	83	610.593750
36	609.125000	84	610.625000
37	609.156250	85	610.656250
38	609.187500	86	610.687500

CHAN	1ST QUADRANT FREQUENCY	CHAN	2ND QUADRANT FREQUENCY
39	609.218750	87	610.718750
40	609.250000	88	610.750000
41	609.281250	89	610.781250
42	609.312500	90	610.812500
43	609.343750	91	610.843750
44	609.375000	92	610.875000
45	609.406250	93	610.906250
46	609.437500	94	610.937500
47	609.468750	95	610.968750

CHAN	3RD QUADRANT FREQUENCY	CHAN	4TH QUADRANT FREQUENCY
97	611.031250	145	612.531250
98	611.062500	146	612.562500
99	611.093750	147	612.593750
100	611.125000	148	612.625000
101	611.156250	149	612.656250
102	611.187500	150	612.687500
103	611.218750	151	612.718750
104	611.250000	152	612.750000
105	611.281250	153	612.781250
106	611.312500	154	612.812500
107	611.343750	155	612.843750
108	611.375000	156	612.875000
109	611.406250	157	612.906250
110	611.437500	158	612.937500
111	611.468750	159	612.968750
112	611.500000	160	613.000000
113	611.531250	161	613.031250
114	611.562500	162	613.062500
115	611.593750	163	613.093750
116	611.625000	164	613.125000
117	611.656250	165	613.156250
118	611.687500	166	613.187500
119	611.718750	167	613.218750
120	611.750000	168	613.250000
121	611.781250	169	613.281250
122	611.812500	170	613.312500
123	611.843750	171	613.343750
124	611.875000	172	613.375000

CHAN	3RD QUADRANT FREQUENCY	CHAN	4TH QUADRANT FREQUENCY
125	611.906250	173	613.406250
126	611.937500	174	613.437500
127	611.968750	175	613.468750
128	612.000000	176	613.500000
129	612.031250	177	613.531250
130	612.062500	178	613.562500
131	612.093750	179	613.593750
132	612.125000	180	613.625000
133	612.156250	181	613.656250
134	612.187500	182	613.687500
135	612.218750	183	613.718750
136	612.250000	184	613.750000
137	612.281250	185	613.781250
138	612.312500	186	613.812500
139	612.343750	187	613.843750
140	612.375000	188	613.875000
141	612.406250	189	613.906250
142	612.437500	190	613.937500
143	612.468750	191	613.968750

7.0 *Appendix A*

Panorama System Verification Document

Customer Name _____

Customer Address _____

1. Verify that the cable run has been certified.

2. Record the software and firmware levels of each system component in the following table. Insure that revision levels on all like components are the same.

MODEL	SOFTWARE REVISION	BASELINE REVISION	HARDWARE REVISION	COMMENTS
Central Station				
Telemetry Server				
Wireless Transceiver				
Ambulatory Transceiver				
Instrument Transceiver				
Passport 2				
Spectrum				

3. Document each antenna, noting its designation, location if necessary, and uplink/ downlink gain setting in the following table.

ANTENNA DESIGNATION	ANTENNA LOCATION	UPLINK GAIN	DOWNLINK GAIN	COMMENTS

4. Document the Serial Number and IP Addresses of each central station, Telemetry Server, Laser Printer, and Monitors in the following tables.

DEVICE TYPE	SERIAL NUMBER	ELAN IP ADDRESS	CLAN IP ADDRESS	MASTER HIVE
Central Station				
Central Station				

DEVICE TYPE	SERIAL NUMBER	DEVICE ID	ELAN IP ADDRESS	WELAN IP ADDRESS
Telemetry Server				
Telemetry Server				

LASER PRINTER MODEL	SERIAL NUMBER	HW LAN ADDRESS	CLAN IP ADDRESS

DEVICE TYPE	SERIAL NUMBER	DEVICE ID	IP ADDRESS

5. Verification of desired coverage and latency. Verification must be performed using an ambulatory transceiver. Mark the status box in the table below for each successfully completed test.

a. Main (A) Coverage - connect the A antenna leg to the Main input on the TIM transceiver. Validate proper transmission throughout the A coverage area.

b. Diversity (B) Coverage - connect the B antenna leg to the Main input on the TIM transceiver. Validate proper transmission throughout the B coverage area.

c. Full ECG Coverage Test - re-connect both antenna legs to their respective connectors on the TIM transceiver. Establish an ECG and admit the transceiver. Verify the central station receives an ECG waveform at all points in the covered area.

d. Latency Test - go to farthest antenna from the central station. Go to the extreme edge of the reception area for this antenna. Initiate an arrhythmia and verify that the Central alarms in less than 10 seconds. Document this time.

e. Transceiver Verification - ensure that all transceivers are functional.

- Transmit an ECG simulator from each ambulatory transceiver and verify that the waveform is received at the assigned Central on the assigned channel.
- Transmit all appropriate waveforms from each instrument transceiver and verify that all waveforms are received at the assigned Central on the assigned channel.

	ACTION	STATUS	COMMENTS
a.	Main A Test		
b.	Diversity B Test		
c.	ECG Coverage Test		
d.	Latency Test (record delay)		
e.	Ambulatory transceivers		

	ACTION	STATUS	COMMENTS
f.	Instrument transceivers		

6. Verification of System Peripherals. Enter the status in the box in the chart below for each successful verification.

a. Verify correct touch screen and mouse operation

b. Verify correct speaker operation. Set the speaker volume to Max.

c. Verify Laser Printer operation.

	ACTION	STATUS	COMMENTS
a.	Touch screen and mouse operation		
b.	Speaker Operation		
c.	Laser Printer Operation		
d.			

7. Documentation - Enter the status in the box in the chart below for each successful verification.

a. Copy the Emergency Disk Files from the central station(s) and Telemetry Server(s) to new floppy disks (one for each unit). Email the files to the central station Coordinator and supply a copy to the local Service Representative.

b. Email a copy of this Installation and Verification Document to the central station Coordinator and supply a copy to the local Service Representative.

	ACTION	STATUS	COMMENTS
a.	Copied Emergency Files to Floppy Disk		
b.	Fully completed installation and Verification Document		

All of the required tests have been completed and the system is ready for operation.

Signature _____

Date _____

8.0 *Appendix B*

TBD

Installation Components

ANTENNA AND SPLITTERS

0998-00-0200	Active antenna
0998-00-0201	2/1 Splitter
0998-00-0199-01	2/1 Splitter (Low loss)

HUBS AND SWITCHES

0992-00-0085-03	12 Port Dual Speed HUB (10/100 MB)
0992-00-0085-04	24 Port Dual Speed HUB (10/100 MB)
0992-00-0086-01	12 Port 100 MB Switch

PATCH PANELS (SHIELDED)

0132-00-0089-01	16 Port
0132-00-0089-02	32 Port

STRAIGHT PATCH CABLES

0012-00-1274-01	Patch Cable (shielded) 6 ft. (1.8 M)
0012-00-1274-02	Patch Cable (shielded) 25 ft. (7.5 M)
0012-00-1274-03	Patch Cable (shielded) 50 ft. (15 M)
0012-00-1274-04	Patch Cable (shielded) 1 ft. (0.3 M)
0012-00-1274-05	Patch Cable (shielded) 2 ft. (0.6 M)
0012-00-1274-06	Patch Cable (shielded) 3 ft. (0.9 M)
0012-00-1274-07	Patch Cable (shielded) 10 ft. (3 M)

CROSSOVER PATCH CABLES

0012-00-1392-05	Crossover Patch Cable (shielded) 3 ft. (0.9 M)
0012-00-1392-06	Crossover Patch Cable (shielded) 6 ft. (1.8 M)
0012-00-1392-07	Crossover Patch Cable (shielded) 10 ft. (3 M)
0012-00-1392-08	Crossover Patch Cable (shielded) 20 ft. (6 M)

BULK CAT5 CABLE (SHIELDED)

PLENUM RATED

0175-00-0101-01	CAT5 STP cable 1000 ft. Belden 1624P

NON-PLENUM RATED

0175-00-0102-01	CAT5 STP cable 1000 ft. Belden 1624R

BULK RG/6 CABLE

PLENUM RATED

0175-00-0106-01	1000 ft. (304 M) Belden 1695A
0175-00-0106-02	500 ft (152 M) Belden 1695A

BULK RG/11 CABLE

PLENUM RATED

0175-00-0104-01	1000 ft. (304 M) Belden 7732A
0175-00-0104-02	500 ft. (152 M) Belden 7732A

RF CONNECTORS

0130-00-0017	BNC connector (75 ohm) for RG/6 Plenum
0130-00-0015	BNC connector (75 ohm) for RG/11 Plenum

UN-INTERRUPTED POWER SUPPLIES AND POWER STRIPS

0992-00-0215-01	UPS 110 V 3000 VA
0992-00-0215-03	UPS 110 V 1500 VA
0992-00-0215-05	UPS 110 V 1000 VA
0992-00-0217-01	Rack Mount power strip (10 outlets)

EQUIPMENT RACK AND SHELVES

0436-00-0222-001	Rack 42 U (TBD in.)
0436-00-0222-401	Sliding shelf 22 inches deep
0436-00-0222-402	Sliding shelf 28 inches deep
0436-00-0222-404	Fixed shelf

EQUIPMENT RACK ACCESSORIES

0436-00-0222-501	12/24 screws (100 pieces)
0436-00-0222-502	Cage nuts (100 pieces)
0436-00-0222-503	Organizer, patch cord

SHIELDED WALL JACKS AND WALL PLATES

Jack Shielded RJ45	0131-00-0262-01
Single-port Wall Plate	0132-00-0091-01
Dual port Wall Plate	0132-00-0091-02
3 Port Wall Plate	0132-00-0091-03
4 Port Wall Plate	0132-00-0091-04
6 port Wall Plate	0132-00-0091-05
Blank filler plate	0131-00-0250-01

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Datascope Corp., US, Canada & Latin America •Patient Monitoring •Worldwide Headquarters • 800 MacArthur Blvd •Mahwah, NJ 07430 •USA •Dom. Customer Service: 1.800.288.2121 • Dom. Fax: 1.800.926.4275 •Intl. Customer Service: 201.995.8000 • Intl. Fax: 201.995.8659 •E-Mail Address: pm_sales@datascope.com

Datascope Europe Africa Office •Drs. W van Royenstraat 8 •P.O. Box 26 •3870 CA • Hoevelaken •The Netherlands •Tel: +31.33.2544911 •Fax: +31.33.2537621

Datascope Asia-Pacific Office •Unit A, 30th Floor, Morrison Plaza •9 Morrison Hill Road • Wan Chai •Hong Kong •Tel: +852.2793.5596 •Fax: +852.2344.8824

Datascope Middle East Office •37 Ahmed El-Sawy Street •Area No. 6 •Nasr City Cairo • Egypt •Tel: +20.2.274.8330 •Fax: +20.2.274.7471

Datascope GmbH •Fabrikstrasse 35 •64625 Bensheim •Germany •Tel: +06251.17050 • Fax: +06251.67877

Datascope Medical Co., Ltd. •Lakeview Court •Ermine Business Park •Huntingdon • Cambs PE29 6XR •United Kingdom •Tel: +01480.423600 •Fax: +01480.423638

Datascope SARL •Z.I. Athelia 1 •13705 La Ciotat •Cedex •France •Tel: +04.42.08.77.50 • Fax: +04.42.08.57.08

Datascope Corp.•Rua José Getúlio 579 - Cj. 92 e 93 •CEP 01509-001 - São Paulo - SP, Brazil • Tel: +5511+3346+5800 •Fax: +5511+3346+5801

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