MOTOROLA
MOTOMESH DUO 4300
Users Guide

May 2007

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Chapter

1

Chapter 1: Product Introduction

This guide will provide you with technical specifications, installation guidelines, and testing procedures for the MOTOMESH Duo 4300 infrastructure devices.

Figure 1-1 MWR4300 Device

Infrastructure Devices

The MOTOMESH DUO 4300 device is configured to run as an Intelligent Access Point (IAP) from the factory. The device is capable of being customer-configured to run as either an IAP or a MWR (Mesh Wireless Router). The selection of an IAP or a MWR configuration will be determined by the customer's wireless network needs at the time of purchase.

When the MOTOMESH Duo 4300 device is configured to run as an IAP, it acts as the transition point from the wireless network to the wired core network and from there, through media gateways, out to the Internet. When the MOTOMSH Duo 4330 device is configured to run as a MWR, it behaves as a wireless device that is primarily deployed to seed and extend the range between IAPs and Wireless Clients while simultaneously increasing the spectral efficiency of the network. While running as a MWR device, the device's Ethernet connector can be utilized to connect to another IP-enabled device. This allows a network of IP-enabled devices (such as a camera) to be directly addressed, accessed and managed over the MOTOMESH network.

IAP functionality includes:

- Transition Point between the wired and wireless network
- Dynamic Route Selection

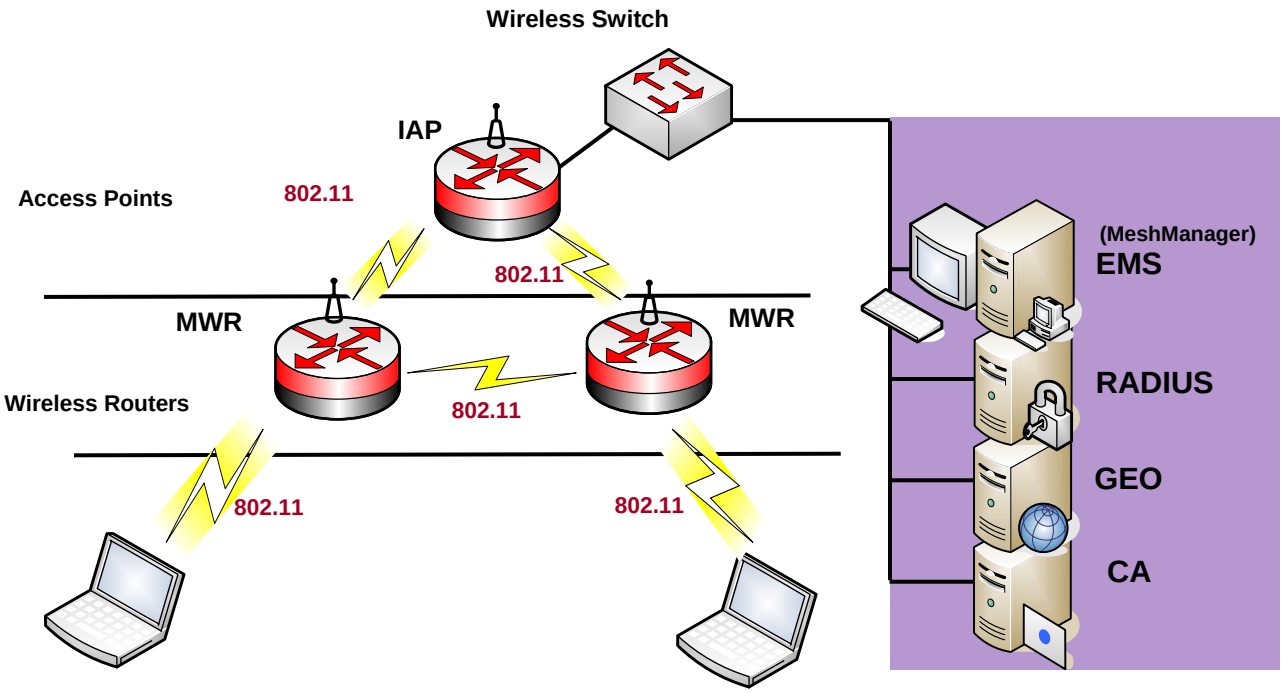
MWR functionality includes:

- Dynamic Route Selection
- Range Extension for all other network devices

Infrastructure Devices within a MOTOMESH 2.0 Wireless Network

A MOTOMESH Duo 4300 device is considered a fixed **Infrastructure** device that can be configured to run as either an IAP (Intelligent Access Point) or a MWR (Mesh Wireless Router) within the MOTOMESH Wireless Network. Infrastructure devices provide area coverage access for wireless clients to the wired network.

Figure 1-2 MWR and IAP Devices in Context of a MOTOMESH Network



MOTOMESH Duo 4300 Device Specifications

The following specification tables apply to the MOTOMESH Duo 4300-49, 4300-58, and 4300-54 Infrastructure Devices.

Table 1-1 MOTOMESH Duo 4300-49 Device Specifications

Radio Characteristics		
Primary Radio Operating Freq. (GHz)	2.4 to 2.4835 (2nd ISM band)	
Secondary Radio Operating Freq. (GHz)	4.94 to 4.99 (U-NII band)	
Wi-Fi Support	802.11b/g at 2.4GHz; 802.11a at 4.9GHz	
RF Modulation	CCK / OFDM	
	2.4 GHz Portion	**4.9 GHz Portion**
Output Power (Maximum)	35 dBm EIRP	34 dBm EIRP
Receive Sensitivity	801.11b: -92 dBm (at 11 Mbps) to -100 dBm (at 1 Mbps) 801.11g: -70 dBm (at 54 Mbps) to -95 dBm (at 6 Mbps)	802.11a: -70 dBm (at 27 Mbps) to -93 dBm (at 3 Mbps)
Power Control	1dB increments	
Antenna Type	Two (2) omnidirectional, 8 dBi (for 2.4 GHz Radio) and 10 dBi (for 4.9 GHz Radio)	
Antenna Connector	N-Type	
Routing		
Routing Engine	MeshConnex Layer 2 routing with Layer 1 situational-awareness	
Routing Protocol	Patented, hybrid proactive/reactive routing (low latency & fast route convergence)	
IEEE 802.11s Support	Upgradeable to final IEEE 802.11s standard via OTA software updates	
Network		
Network Management Software	MeshManager Element Management System via secure SNMP v.3	
Network Interface	10/100Mbps Ethernet (RJ-45) port with surge suppression	
Network Segmentation	Multiple SSIDs with VLAN mapping	
Quality of Service (QoS)	802.11e, EDCF, and IP precedence bits (ToS) supported via DSC	
Security		
Virtual LAN (VLAN)	Supports up to sixteen (16) per node, or 4094 per network	
Client Encryption Support	WEP, WPA (TKIP) and WPA2 (AES, 802.11i)	
Internodal Encryption	Intra-Mesh Security	
Authentication	802.1X (Infrastructure/Client) and MAC address hardware authentication	

Power	
Power Requirements	90 -264 VAC (with variation at 47 to 63 Hz)
Power Connector	AC power cord, 12 ft
Power Consumption	15W (with both radios operating at 50% duty cycle)
Power over Ethernet (PoE)	Support for Canopy PoE connection
Physical	
Dimensions	9”x 6”x 3.5” (23.1cm x 15.2cm x 8.9cm)
Weight	4.5 lbs (2.04kg)
Packaging	Outdoor, all-weather enclosure (NEMA 4)
Mounting	3” (7.62cm) diameter post mounting
Environment	
Temperature Range	-30 to +60 °C
Humidity	0 to 95%, non-condensing
Certifications	FCC Part 15 & 90, UL, CSA
Available Options	
Mounting	Lamp post mount bracket assembly
Power	AC photo cell adapter
DC Input	12 VDC +- 2 VDC

Table 1-2 MOTOMESH Duo 4300-58 Device Specifications

Radio Characteristics		
Primary Radio Operating Freq. (GHz)	2.4 to 2.4835 (2nd ISM band)	
Secondary Radio Operating Freq. (GHz)	5.725 to 5.825 (UNI-3 band)	
Wi-Fi Support	802.11b/g at 2.4GHz; 802.11a at 5.8GHz	
RF Modulation	CCK / OFDM	
	2.4 GHz Portion	**5.8 GHz Portion**
Output Power (Maximum)	35 dBm EIRP	34 dBm EIRP
Receive Sensitivity	801.11b: -92 dBm (at 11 Mbps) to -100 dBm (at 1 Mbps) 801.11g: -70 dBm (at 54 Mbps) to -95 dBm (at 6 Mbps)	802.11a: -70 dBm (at 54 Mbps) to -93 dBm (at 6 Mbps)
Power Control	1dB increments	
Antenna Type	Two (2) omnidirectional, 8 dBi (for 2.4 GHz Radio) and 10 dBi (for 5.8 GHz Radio)	
Antenna Connector	N-Type	

Routing	
Routing Engine	MeshConnex Layer 2 routing with Layer 1 situational-awareness
Routing Protocol	Patented, hybrid proactive/reactive routing (low latency & fast route convergence)
IEEE 802.11s Support	Upgradeable to final IEEE 802.11s standard via OTA software updates
Network	
Network Management Software	MeshManager Element Management System via secure SNMP v.3
Network Interface	10/100Mbps Ethernet (RJ-45) port with surge suppression
Network Segmentation	Multiple SSIDs with VLAN mapping
Quality of Service (QoS)	802.11e, EDCF, and IP precedence bits (ToS) supported via DSC
Security	
Virtual LAN (VLAN)	Supports up to sixteen (16) per node, or 4094 per network
Client Encryption Support	WEP, WPA (TKIP) and WPA2 (AES, 802.11i)
Internodal Encryption	Intra-Mesh Security
Authentication	802.1X (Infrastructure/Client) and MAC address hardware authentication
Power	
Power Requirements	90-264 VAC (with variation at 47 to 63 Hz)
Power Connector	AC power cord, 12 ft
Power Consumption	15W (with both radios operating at 50% duty cycle)
Power over Ethernet (PoE)	Support for Canopy PoE connection
Physical	
Dimensions	9”x 6”x 3.5” (23.1cm x 15.2cm x 8.9cm)
Weight	4.5 lbs (2.04kg)
Packaging	Outdoor, all-weather enclosure (NEMA 4)
Mounting	3" (7.62cm) diameter post mounting
Environment	
Temperature Range	-30 to +60 °C
Humidity	0 to 95%, non-condensing
Certifications	FCC Part 15 & 90, UL, CSA
Available Options	
Mounting	Lamp post mount bracket assembly
Power	AC photo cell adapter
DC Input	12 VDC +- 2 VDC

Table 1-3 MOTOMESH Duo 4300-54 Device Specifications

Radio Characteristics		
Primary Radio Operating Freq. (GHz)	2.4 to 2.4835 (2nd ISM band)	
Secondary Radio Operating Freq. (GHz)	5.49 to 5.71 (ETSI – Band B)	
Wi-Fi Support	802.11b/g at 2.4GHz; 802.11a at 5.4GHz	
RF Modulation	CCK / OFDM	
	2.4 GHz Portion	**5.4 GHz Portion**
Output Power (Maximum)	35 dBm EIRP	30 dBm EIRP
Receive Sensitivity	801.11b: -92 dBm (at 11 Mbps) to -100 dBm (at 1 Mbps) 801.11g: -70 dBm (at 54 Mbps) to -95 dBm (at 6 Mbps)	802.11a: -70 dBm (at 54 Mbps) to -93 dBm (at 6 Mbps)
Power Control	1dB increments	
Antenna Type	Two (2) omnidirectional, 8 dBi (for 2.4 GHz Radio) and 10 dBi (for 5.8 GHz Radio)	
Antenna Connector	N-Type	
Routing		
Routing Engine	MeshConnex Layer 2 routing with Layer 1 situational-awareness	
Routing Protocol	Patented, hybrid proactive/reactive routing (low latency & fast route convergence)	
IEEE 802.11s Support	Upgradeable to final IEEE 802.11s standard via OTA software updates	
Network		
Network Management Software	MeshManager Element Management System via secure SNMP v.3	
Network Interface	10/100Mbps Ethernet (RJ-45) port with surge suppression	
Network Segmentation	Multiple SSIDs with VLAN mapping	
Quality of Service (QoS)	802.11e, EDCF, and IP precedence bits (ToS) supported via DSC	
Security		
Virtual LAN (VLAN)	Supports up to sixteen (16) per node, or 4094 per network	
Client Encryption Support	WEP, WPA (TKIP) and WPA2 (AES, 802.11i)	
Internodal Encryption	Intra-Mesh Security	
Authentication	802.1X (Infrastructure/Client) and MAC address hardware authentication	
Power		
Power Requirements	90-264 VAC (with variation at 47 to 63 Hz)	
Power Connector	AC power cord, 12 ft	

Power Consumption	15W (with both radios operating at 50% duty cycle)
Power over Ethernet (PoE)	Support for Canopy PoE connection
Physical	
Dimensions	9”x 6”x 3.5” (23.1cm x 15.2cm x 8.9cm)
Weight	4.5 lbs (2.04kg)
Packaging	Outdoor, all-weather enclosure (NEMA 4)
Mounting	3" (7.62cm) diameter post mounting
Environment	
Temperature Range	-30 to +60 °C
Humidity	0 to 95%, non-condensing
Certifications	FCC Part 15 & 90, UL, CSA
Available Options	
Mounting	Lamp post mount bracket assembly
Power	AC photo cell adapter
DC Input	12 VDC +- 2 VDC

Chapter

2

Chapter 2: Infrastructure Device Installation

This chapter will provide hardware and software installation information for the MOTOMESH DUO 4300 Infrastructure Device.

Software Requirements

The MOTOMESH DUO 4300 infrastructure devices must be setup and configured using the MeshManager Element Management System.

The MeshManager Element Manager System is used for device setup, configuration, and management of MOTOMESH infrastructure devices. Prior to using the MeshManager software for device installation and configuration, ensure that it is installed and running on a network computer. MeshManager will be used during the device setup process to validate the installation of the device(s) as well as manage, within the wireless network.

Detailed information about the MeshManager application is found in the *MeshManager Users Guide*.

Hardware Installation Notes

For a MOTOMESH 2.0 deployment, a permanent power source for each MOTOMESH Duo 4300 device must be provided. All infrastructure devices require professional installation to ensure that the installation is performed in accordance with FCC licensing regulations

Infrastructure devices are fitted with two mounting brackets designed to be attached to light poles and other probable installation sites. Alternate mounting hardware is available for mounting directly to posts or structures that are too large for the standard brackets. Optional remote antenna mount hardware is also available for use with the alternate mounting hardware.

Equipment Specification

The specifications listed in the following table apply for all Infrastructure devices.

Table 2-1 MOTOMESH Duo 4300-49 Radio Characteristics

Characteristic	2.4GHz 802.11 b/g	4.9GHz
Output Power	27 dBm	25 dBm
RF Modulation	CCK/OFDM	OFDM
Operating Frequency (GHz)	2.4 - 2.4835	4.94 - 4.99
EIRP	35 dBi	34 dBi
Channel Selection	20 MHz	10 - 20 MHz

Table 2-2 MOTOMESH Duo 4300-58 Radio Characteristics

Characteristic	2.4GHz 802.11 b/g	5.8GHz 802.11a
Output Power	27 dBm	25 dBm
RF Modulation	CCK/OFDM	OFDM
Operating Frequency (GHz)	2.4 - 2.4835	5.725 - 5.825
Maximum Burst Data Rate	54 Mbps	54 Mbps
Spectrum Used	20 MHz	20 MHz

Table 2-3 MOTOMESH Duo 4300-54 Radio Characteristics

Characteristic	2.4GHz 802.11 b/g	5.4GHz
Output Power	27 dBm	25 dBm
RF Modulation	CCK/OFDM	OFDM
Operating Frequency (GHz)	2.4 - 2.4835	5.49 - 5.71
Maximum Burst Data Rate	54 Mbps	54 Mbps
Spectrum Used	20 MHz	20 MHz

Ports and Connections

The following list defines the standard ports and connections for the MOTOMESH Duo 4300 device running in either the IAP or MWR modes.

- Device Enclosure with 2 N-type Female Antenna Connector

- 120V A/C Power Cable with flying leads
- One Ethernet port
- Canopy Connect PoE (IAP Devices only) or standards based 802.3af PoE (IAP and MWR). **NOTE:** At this time, the IAPs can only be pre-configured to use Canopy Connect PoE or Standards Based PoE (IAP and MWR), or none of the two PoEs, at the time of purchase. These options are not available after the device has already been configured and shipped to a customer site.
- Optional External Personality Plug to activate power over Ethernet (Motorola Canopy ™ PoE (on IAP Devices only) or standards based 802.3af PoE (on the IAP and MWR).
- Mounting Bracket (Standard and Optional)

Operator Supply List

The Network Operator must supply the following equipment:

- Mounting Location
- Power Source (120V A/C depending on IAP configuration)
- Ethernet connection between the IAP and MiSC.

Optional Antennas

The following antennas are recommended for use with Infrastructure Devices.

Table 2-4 Recommended Antennas for Infrastructure Devices

Manufacturer	Part Number	Gain	Usage
Maxrad	MFB2408NMDC	8 dBi	2.4 GHz Infrastructure
Radiall-Larsen	R380.700.212	10 dBi	5.8 GHz Infrastructure

MOTOMESH DUO Infrastructure Device Labels

The MAC address for each device is recorded on a label located on the device enclosure. Record this number in the provided ***IAP or MWR*** MAC Address Table section. The MAC Addresses will be required later to configure and test the device.

Figure 2-1 MOTOMESH DUO 4300 - 49 Device Product Label (sample)

Figure 2-2 MOTOMESH DUO 4300 - 58 Device Product Label (sample)

Figure 2-3 MOTOMESH DUO 4300 - 54 Device Product Label (European Use only)

Infrastructure Device MAC Address Table

Table 2-5 MAC Address Table

MWR or IAP	Device Name	Ethernet MAC IP Address

MWR or IAP	Device Name	Ethernet MAC IP Address

Infrastructure Device Assembly

Figure 2-4 shows the external connection points for a MOTOMESH Duo 4300 device.

Figure 2-4 Infrastructure Device Top View showing External Connection Points

Figure 2-5 External Personality Plugs (Use Black or Grey, or none)

NOTE: If your device does not have either of the plugs, it may mean that neither of the available PoE Options was purchased.

Figure 2-6 Close Up of External Connection Points

Infrastructure Device Deployment and Installation

The MWR and the IAP devices require professional installation to ensure that the installation is performed in accordance with FCC licensing regulations. All common precautions for grounding and electrostatic discharge protection should be observed during deployment and installation.

Observe the following additional guidelines when deploying fixed Infrastructure devices (MWR and IAP):

- The MOTOMESH Duo 4300 device may be mounted on a pole having a diameter of 1-3.5 inches, utilizing the provided brackets.
- The antenna must have a separation distance of at least 2 meters from the body of all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
- Users and installers must be provided with antenna installation and transmitter operating conditions to satisfy RF exposure compliance.
- When deploying the MOTOMESH Duo 4300 device, the antenna(s) should be a minimum of 30 inches from any nearby metal poles to avoid distortion of the RF pattern.
- The installation location must provide power to the MOTOMESH DUO 4300 Device.
- It is the responsibility of the Network Operator to ensure that the installation complies with any local building codes and permits.

Grounding Considerations

In order for a grounding system to be effective, a low impedance path to earth ground must be present. The grounding system must have conductors of sufficient size to withstand the high fault currents that must be shunted along this path. The lower the impedance the grounding system displays, the better its capability to perform its task. The impedance requirement for a communications site is determined by the classification of the site. Sites are broken down into 2 categories: Type A-Light Duty and Type B-Light Industrial/Commercial. Type A-Light Duty sites have impedance requirements of 25 ohms or less to ground whereas Type B- Light Industrial/Commercial sites have impedance requirements of less than 5 ohms to ground. MOTOMESH 2.0 networks fall into the Type B-Light Industrial/Commercial category, and therefore must be treated with greater considerations as far as grounding requirements are concerned.

Since Type B grounding requirements stipulate 5 ohms or less impedance to earth ground, things such as soil pH, type of grounding rods, size of conductors, and ground enhancing materials must be taken into account to achieve this goal. To verify the impedance requirements are met, a special Earth/Ground Resistance Tester (megohmmeter) may be necessary.

- If the MOTOMESH 2.0 product is attached to a light arm and the attachment point meets the Type B grounding requirements, then the grounding stud attachment point is not required to be used.

Assembling the MOTOMESH Duo Device

Use the following procedure to assemble a MOTOMESH Duo Device.

Procedure 2-1 Assembling the MOTOMESH Duo Device

1	Place the brackets at the desired position on the pole.
2	Adjust the position of the box so that the antenna connecters are positioned vertically. Align the antennas with the N-type connectors on the box and rotate to close.
3	Insert the cable into the external Ethernet port and tighten the connector to ensure a weatherproof seal.
4	Insert the Power Plug into the 4-pin connector.

Initial Infrastructure Device Configuration Information

Prior to attempting the configuration of a MOTOMESH Duo device, ensure that the device is powered up and has connectivity to the MiSC.

Device Connectivity Testing

Only *after* a MiSC has been setup on the network, and an infrastructure device has been added using the MeshManager, element management system software, that the procedure below can be used to verify connectivity to a device.

Procedure 2-2 Testing Infrastructure Device Connectivity

1	Apply power to the device, the device should be operation in 60 to 120 seconds
2	Obtain the 802.11 MAC addresses for the device subcomponents that were recorded in the MAC Address

	Table earlier in this manual. The address will be in the following format: xx-xx-xx-xx-xx-xx.
3	Within MeshManager's Device Manager screen, right-click on the appropriate MWR or IAP device in the Device Tree and select the **Ping Device** option.
4	Check for a successful response to the **Ping** command in the *Named Device* results dialog box. A successful response to the ping commands verifies connectivity to the device (MWR or IAP).
5	Repeat steps 1-4 for additional MWR or IAP devices.

Chapter

3

Chapter 3: Device Configuration

This chapter includes the following sections:

- Pre-staging a MOTOMESH Duo 4300 device in MeshManager
- Second IP stack in MOTOMESH Duo Devices

Pre-staging a MOTOMESH Duo 4300 Device in MeshManager

This information will be available the week of 5-14-07 and will be reviewed by Craig Perkins and probably someone in the System Test group.

Second IP Stack Aids in Troubleshooting

The second IP Stack feature is available in MOTOMESH 2.0 Duo 4300 devices and allows for a pre-configured SSID and connectivity to a fixed IP. This feature can assist you with correcting and diagnosing some cases of stranded units rather than having to roll a bucket truck. Operators will find this feature helpful when configuring nodes for expansion or replacement.

Second IP Stack Settings

A MOTOMESH Duo device can be accessed via a client access card (a PCMCIA Wireless Client Card) that is attached to a laptop computer. The client access card must be set to the settings specified in MeshManager for Device Recovery.

NOTE: ***It is important to note that VAP 15 is to be used only for Second IP Stack data.***

Accessing the MOTOMESH Duo Device Recovery Settings in MeshManager

Procedure 3-1 Accessing the MOTOMESH Duo Device Recovery Settings

1	Select a specific device from the *Device Tree* in MeshManager.
2	From the right side of the screen, select **Global Configuration** from the *Action* drop-down list.
3	Select the ***Device Recovery*** tab.
4	View the Default VAP 15 Settings setup for the purpose of device recovery.
5	You can choose to keep the default settings or change them after your wireless network is setup, configured, and working correctly.

Device Recovery Settings

The MOTOMESH Duo *device recovery* default settings (VAP 15) have the following conditions:

- Authentication Type– WPA-AUTO-PSK
- Cipher Mode- AUTO
- Passphrase- blackd0g
- Static IP Address- 192.168.1.1
- IP network mask- 255.255.255.0
- SSID- MotoMesh
- SSID Suppression- On

If you change any of the default settings for VAP15, make sure that when it is time to recover your MOTOMESH Duo Device that the Client Access Card is set to match your current network settings for Device Recovery (VAP15).

Chapter

4

Chapter 4: License Information

This chapter includes the contents of the Motorola End User License Agreement (EULA) as well as a Third Party License section.

Motorola End User License Agreement

MOTOROLA, INC.

END USER LICENSE AGREEMENT

Motorola is willing to license its Mesh Networking Software Solutions (defined as "Products" below) and the accompanying documentation to you only on the condition that you accept all the terms in this License Agreement ("Agreement").

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BY CLICKING ON THE "ACCEPT" BUTTON BELOW, YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREEMENT, UNDERSTAND IT AND AGREE TO BE BOUND BY THE TERMS OF THIS AGREEMENT. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, MOTOROLA IS NOT WILLING TO LICENSE THE PRODUCTS TO YOU. YOU SHOULD CLICK ON THE "DO NOT ACCEPT" BUTTON TO DISCONTINUE THE SOFTWARE INSTALLATION PROCESS. IF YOU DO NOT AGREE TO THESE TERMS, YOU MAY, WITHIN FIFTEEN (15) DAYS, RETURN THIS ENTIRE PRODUCT TO THE LOCATION WHERE YOU ACQUIRED IT OR PROVIDE WRITTEN VERIFICATION OF DELETION OF ALL COPIES OF THE ENTIRE PRODUCT IF YOU HAVE NOT PHYSICALLY RECEIVED A PRODUCT FOR A FULL REFUND.

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============================================================

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Chapter

5

Chapter 5: Customer Service

This chapter provides information about how to obtain customer service support from Motorola and describes the type of information you should have available prior to making the support call.

Customer Service Information

If you have read this document and made every effort to resolve installation or operation issues yourself and still require help, please contact Motorola System Support Center (SSC) using the following contact information:

Hours of Operation

7 days a week, 24 hours

Technical Support: 800-221-7144 (USA)

Obtaining Support

Motorola provides technical support services for your system and recommends that you coordinate warranty and repair activities through the Motorola System Support Center (SSC). When you consult the Motorola SSC, you increase the likelihood that problems are rectified in a timely fashion and that warranty requirements are satisfied. Check your contract for specific warranty and service information.

System Information

To be provided with the best possible opportunity for support, collect the following system information and have it available when obtaining support.

- Location of the system
- Date the system was put into service
- Software or firmware version information for components of your system

- Serial number(s) of the device(s) or component(s) requiring support
- A written description of the symptom or observation of the problem:

  - When did it first appear?

  - Can it be reproduced?

  - What is the step-by-step procedure to cause it?
- Do other circumstances contribute to the problem? For example, changes in weather or other conditions?
- Maintenance action preceding problem:

  - Upgrade of software or equipment

  - Change in the hardware or software configuration

  - Software reload - from backup or from CD-ROM (note the version and date)

Return Material Request

After collecting system information, contact the Motorola System Support Center for assistance or to obtain a Return Material Authorization (RMA) number for faulty Field Replaceable Entities (FREs):

North America: 800-221-7144

Radio Products and Services Division

The Radio Products and Services Division is your source for manuals and replacement parts.

Radio Products and Services Division Telephone Numbers

The telephone numbers for ordering are: (800)-422-4210 (US and Canada orders)

The fax numbers are: (800)-622–6210 (US and Canada orders)

The number for help identifying an item or part number is (800)-422-4210; select choice “3” from the menu

Returning System Components to Motorola

Motorola's service philosophy is based on field replaceable entities (FREs). FREs are system components identified by Motorola to be returned to Motorola for repair.

Returning FREs

Return faulty FREs to Motorola for repair. When you return an assembly for service, follow these best practices:

- Place any assembly containing CMOS devices in a static-proof bag or container for shipment.
- Obtain a return authorization (RA) number from the Motorola System Support Center.

- Include the warranty, model, kit numbers, and serial numbers on the job ticket, as necessary.
- If the warranty is out of date, you must have a purchase order.
- Print the return address clearly, in block letters.
- Provide a phone number where your repair technician can be reached.
- Include the contact person's name for return.
- Pack the assembly tightly and securely, preferably in its original shipping container.

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Chapter

6

Chapter 6: Certification and Safety Information

This chapter lists the relevant FCC Certification and Product Safety Information for the MOTOMESH devices described in this manual.

FCC Regulatory Information

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.

The MWR4300 requires professional installation to ensure the installation is performed in accordance with FCC licensing regulations.

Federal Communications Commission (FCC) Statement:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by Motorola could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 2 meters between the radiator and your body.

Safety Information for MOTOMESH Products

The Federal Communications Commission (FCC) with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. Motorola MOTOMESH products meet the uncontrolled environmental limits found in OET-65 and ANSI C95.1, 1991. Proper operation of this radio according to the instructions found in this manual and the hardware and software guides on the MOTOMESH CD will result in user exposure that is substantially below the FCC recommended limits.

- Do not touch or move the antenna(s) while the unit is transmitting or receiving.
- Do not hold any component containing a radio such that the antenna is very close to or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate a portable transmitter near unshielded blasting caps or in an explosive environment unless it is a type especially qualified for such use.
- Do not operate the radio or attempt to transmit data unless the antenna is connected; otherwise, the radio may be damaged.

Safety Certification

Conforms to UL STD ANSI/UL 60950 3rd Edition

Certified to CAN/CSA C22.2 NO. 60950-00

Equipment shall be suitable for use in Air pressure: 86kPa to106kPa.

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Glossary

EDCF – Enhanced Distributed Coordination Function

EMS – Element Management System

IAP – Intelligent Access Point

MiSC – Mobile Internet Switching Controller

MWR– Mesh Wireless Router

POE – Power over the Ethernet. Two types of PoE are currently supported in MOTOMESH Duo 4300 devices. Only one type is available at any one time if ordered at time of purchase, otherwise PoE is not enabled. It is the standards based 802.3af PoE or the Canopy Connect PoE.

TFTP - Trivial File Transfer Protocol. A network utility that is simpler to use than the File Transfer Protocol (FTP).

WR – Wireless Router (same as MWR)

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