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1303 E. Algonquin Road
Schaumburg, IL 60196

September 30, 2016

Joplin Police Department
Attn: Mr. Matt Stewart, Police Chief
303 E. 3rd
Joplin MO, 64801

Subject: City of Joplin, MO 7.1 to 7.16 System Upgrade

Dear Mr. Stewart,

Motorola Solutions, Inc. ("Motorola") is pleased to have the opportunity to provide the City of Joplin, MO with quality communications equipment and services. The Motorola project team has taken great care to propose a solution to address your needs and provide exceptional value. The State of Missouri pricing contract was utilized in developing this proposal. Motorola's solution includes a combination of hardware, software, and services. Specifically, this solution provides:

- Replace existing 7.1 switch with a new 7.16 switch.
- 5 MCC7500 Console Positions
- AIS Trunked Logging Recorder
- Console & Radio Licenses
- Networking Management License
- Control Stations

We thank you for the opportunity to furnish the City of Joplin, MO with this solution and we hope to strengthen our relationship by implementing this project. Our goal is to provide you with the best products and services available in the communications industry.

Any questions can be directed to Regi Mele, Account Executive, at 312-835-9096.

Sincerely,

Motorola Solutions, Inc.

Ali Kapadia
MSSI Vice President & Director of Sales

CITY OF JOPLIN, MO 7.1 TO 7.16 SYSTEM UPGRADE

MOTOROLA

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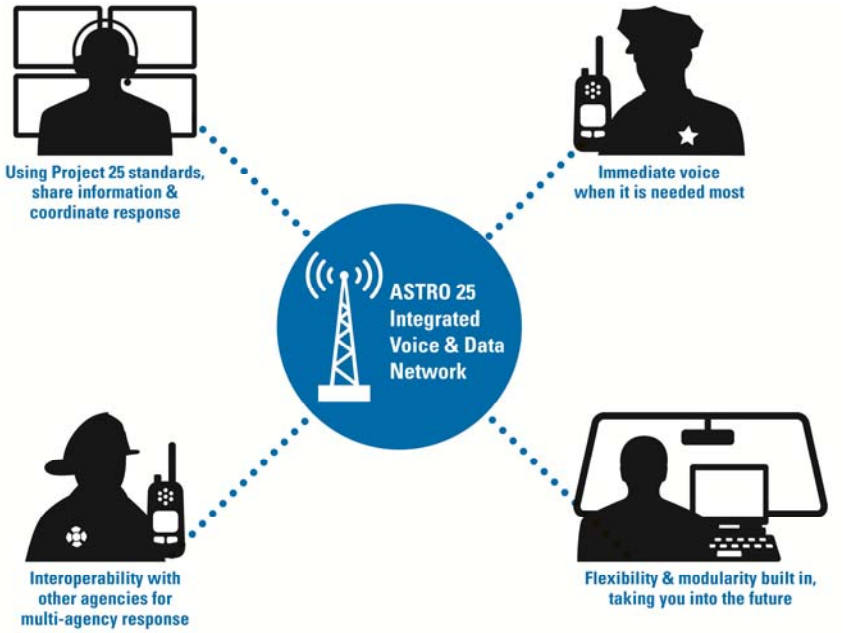
SYSTEM DESCRIPTION

1.1 OVERVIEW

ASTRO® 25 is the most widely used Project 25, Mission-Critical, communication network for public safety agencies. Installed worldwide, ASTRO 25 solutions meet and exceed requirements for day-to-day operations, as well as emergency response in the most demanding situations. ASTRO 25 is a wireless platform that combines uncompromising, real-world performance and the legendary reliability of Motorola Solutions, Inc. (“Motorola”). Motorola’s ASTRO 25 platform is the foundation of our Mission-Critical portfolio. ASTRO 25 offers a Project 25, with a standards-based Internet Protocol (IP) modular solution.

A PLATFORM WITH UNPARALLELED FLEXIBILITY

ASTRO 25 is optimized for the rigorous demands of public safety, providing reliable communications. When an emergency involves multiple agencies, first responders can share voice communication among their teams. In addition, centralized command and control can deploy resources efficiently, maintain communication security, and track personnel effectively.



1.2 PROPOSED SOLUTION

Motorola is pleased to provide a quote to upgrade the City of Joplin's existing ASTRO 25 7.1 trunking system to an ASTRO 25 7.16 system. The ASTRO 7.16 is the Motorola's latest P25 system release.

Motorola is proposing an ASTRO 25 L2 redundant trunking system Master site with (5) MCC 7500 dispatch consoles. The two existing ASTRO 25 Repeater Sites will be upgraded with the latest software and continue to be used. A description of the proposed solution, coverage, features, benefits, system architecture, and hardware components are provided in this section.

1.2.1 System Configuration

1.2.1.1 ASTRO 25 L2 Redundant Trunking System Master Site

The following Master site components are provided:

- Two Virtual Servers configured for Zone Controller, Domain Controller, Provisioning Manager, Zone statistical server, Air Traffic Router, Backup and Recovery, Zone Database Server, Unified Event Manager and License Manager
- Two (2) HP3800-48 Core LAN Switches
- Two (2) Gateway Routers
- Two (2) Core Routers
- Two (2) Backhaul Switches
- One (1) Terminal Server
- One (1) Local Network Management Client
- One (1) Remote Network Management Client
- One (1) ISSI 8000 server and firewall with 10 manual roaming talkgroup license
- 1,500 Radio Subscriber Licenses
- Recommended spares

1.2.1.2 MCC7500 Dispatch Console System

The following MCC7500 dispatch console components are provided:

- Five (5) console operator positions. Each position configured with:
  - 22" no-touch LCD monitor
  - Two (2) speakers
  - One (1) gooseneck microphone
  - One (1) dual pedal footswitch
  - One (1) headset jacks
  - Two (2) single muff headsets
  - Instant Recall Recorder with two (2) speakers
  - AES and DES-OFB encryptions
- IP Logging Recorder Interface (logging recorder is not included):
  - One (1) Archiving Interface Server
  - One (1) Control Room Firewall
  - One (1) CEN switch
- One (1) Aux I/O to control external devices (up to 48 inputs and 16 outputs)
- One (1) Conventional Site Controller

- One (1) Conventional Channel Gateway
- One (1) Key Variable Loader (KVL4000)
- Recommended spares

1.2.1.3 Existing ASTRO 25 Repeater Site Upgrade

The following upgrade components are provided:

9-Channel ASTRO 25 Repeater Site

- Nine (9) GTR8000 Expandable Site Subsystem site repeater software upgrade
- Two (2) Site Controller software upgrade

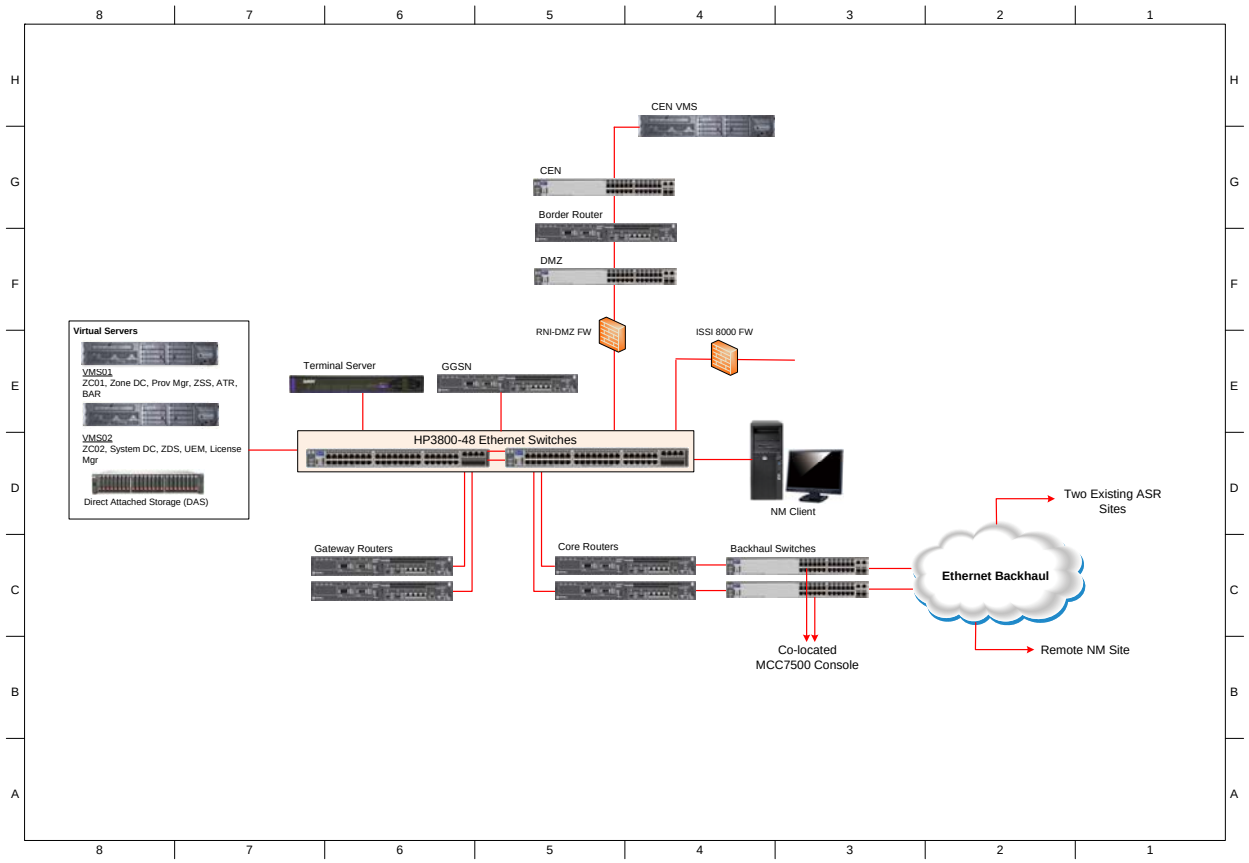
4-Channel ASTRO 25 Repeater Site

- Four (4) GTR8000 Expandable Site Subsystem site repeater software upgrade
- Two (2) Site Controller software upgrade

1.3 SYSTEM DIAGRAMS

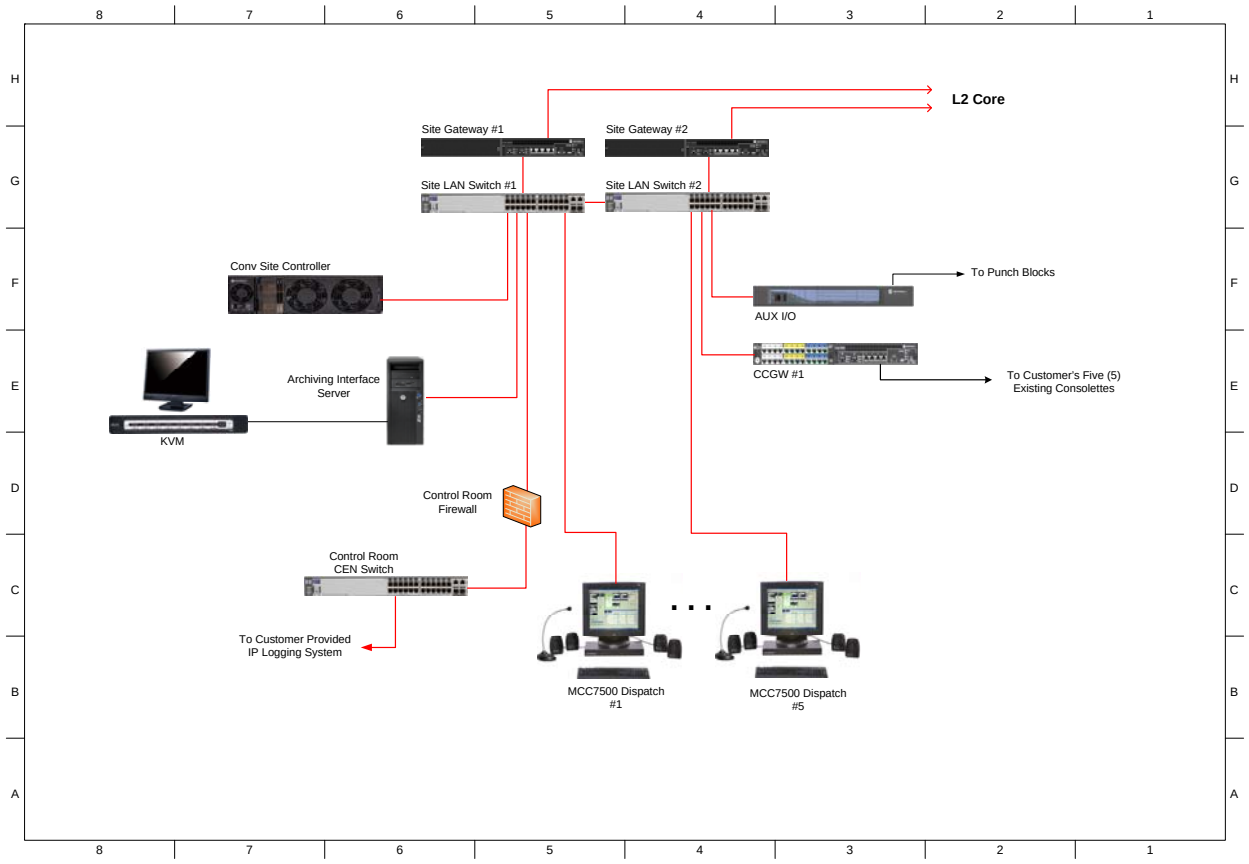
1.3.1.1 ASTRO 25 L2 Master Site Block Diagram

Please see the following page for the L2 Master Site block diagram.



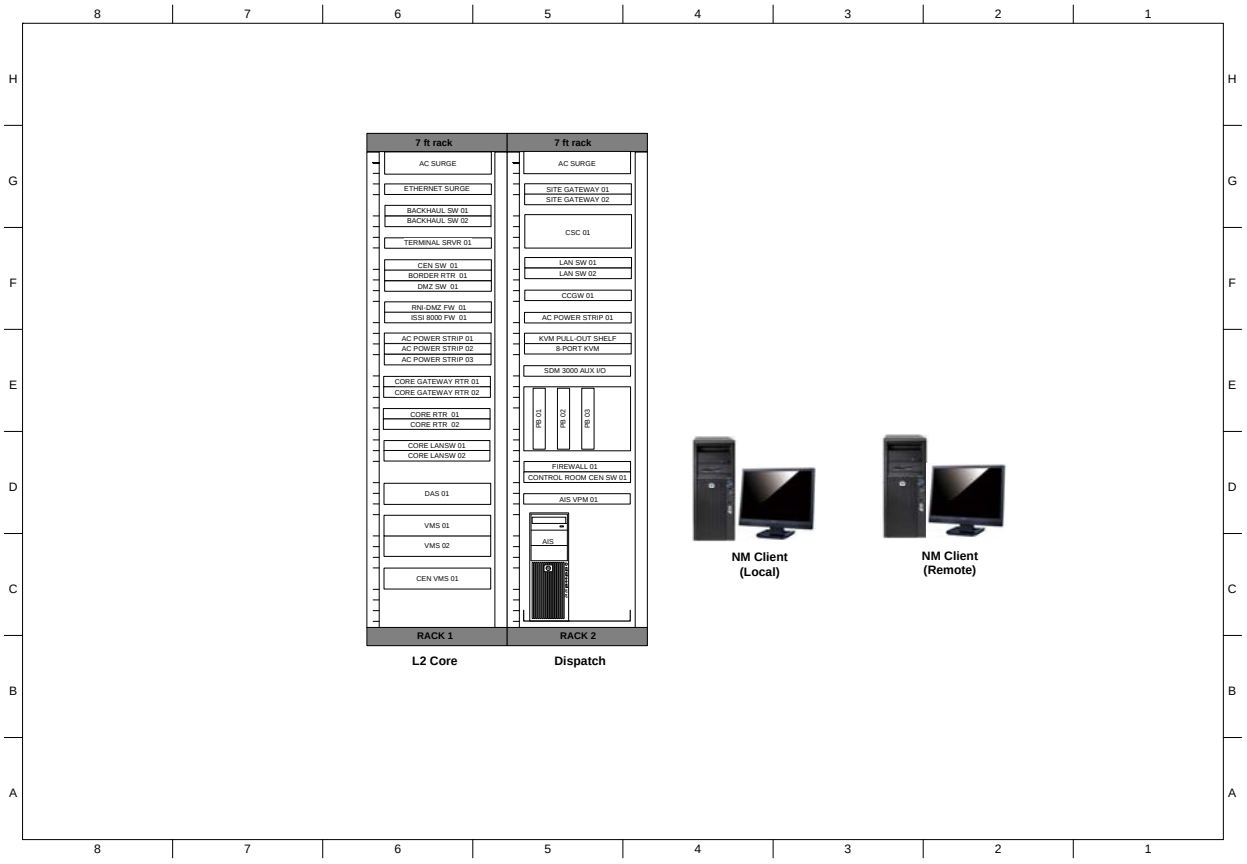
1.3.1.2 MCC7500 Dispatch Console Block Diagram

Please see the following page for the MCC7500 Dispatch Console block diagram.



1.3.1.3 Rack Diagram

Please see the following page for the Rack Diagram. The L2 Master Site equipment and MCC7500 Dispatch equipment will be co-located.



1.4 ASTRO 25 IP SYSTEM FEATURES

An ASTRO 25 system is a feature-rich, modular platform that consists of a Core site, which may include ASTRO 25 RF sites. ASTRO 25 transparently links dispatch and field personnel, tracking each radio from site-to-site and group-to-group. Radio sites are automatically assigned and connected for wide area calls, allowing a dispatcher or field unit to effortlessly reach another radio - no matter where the person is located in the service area.

This section discusses the various key features and equipment components that comprise the proposed system.

1.4.1 Master Site

The master site is the central point for all system traffic in each ASTRO 25 zone. Call processing and system management occur at the master site. The Voice and Data call processing for each zone is performed by the Zone Controller. The Zone Controller(s) maintains constant communication between the RF Sites and Network Management (NM) sub-systems via the Network Transport Subsystem.

1.4.2 Network Management System

The Network Management System (NMS) can be viewed as a set of software applications or tools used to manage the ASTRO 25 wide area trunked radio system and its constituent components.

The NMS supports the following services:

- Fault Management – Applications are included for monitoring the status of the transport network and the individual infrastructure components; displaying fault information; forwarding alert information; and performing diagnostic procedures.
- Configuration Management – Facilities are provided for entering and maintaining the operational parameters of the infrastructure components and user devices (i.e., the mobile and portable radios).
- Accounting Management– NMS supports the tracking of radio usage of the system by providing an optional interface to third-party accounting and/or billing applications.
- Performance Management – Standard and optional applications are available for monitoring, reporting, controlling, and optimizing the use of system resources.
- Security Management – NMS includes features for setting user privileges and controlling their access to view and/or modify information contained in the configuration databases.

Network Management Terminals

The NMS Windows-based client/server architecture distributes most of the user application processing to the client PC workstations. This approach yields important benefits:

- Application performance is less dependent on the number of concurrent users and open applications;
- Personnel typically responsible for managing a radio system or computer network are already familiar with, or easily trained to use, the Graphical User Interface (GUI) of NMS applications that conform to Windows operating system conventions; and,
- Remote operation performance over a limited bandwidth link (e.g., a telephone line used for accessing the network remotely via dial-up modems) is improved.

The following applications run on or may be accessed from the PC client workstations. A description of each of these applications is described in the paragraphs that follow.

- System/Zone Profile
- Unified Network Configurator (UNC)
- Provisioning Manager (PM)
- Unified Event Manager (UEM)
- Historical Reports
- Radio Control Manager (RCM)
- ZoneWatch
- Affiliation Display
- Dynamic Reports

System and Zone Profile

The Zone and System Level Profile applications allow network managers to access pertinent zone and system level information. The Zone Profile application, for example, allows a user to view server status and the applications running on the servers at that time. System application usage is also displayed. The System Profile application allows the view of the applications currently in use and the user logged on to this application.

Unified Network Configurator (UNC)

The UNC is a network change and configuration management tool that enables users to efficiently manage the configurations of networks and devices in an ASTRO 25 system. The UNC is built on VoyenceControl, which is an automated compliance, change and configuration management system.

The UNC allows you to make configuration changes to the network using a single configuration tool, plus:

- Automatically discovers devices in the network.
- Allows flexible creation and distribution of device configurations.
- Provides supervision and auditing tools for controlling changes and detecting errors.
- E.g. Administrators can set up approval mechanisms which would require subordinates to obtain their supervisors' approval before submission of configuration changes.
- Includes an intuitive web-based interface for commonly used tasks.

Unified Network Configurator allows system managers to put proper policies and tools in place around change and configuration management to keep the ASTRO 25 system running at its peak performance.

Provisioning Manager (PM)

Provisioning Manager is a tool that enables system managers to efficiently manage the configurations of console users, radios, radio users, talkgroups and multi-groups in order to control the radio communications for each user group of an organization. By controlling communications between different user groups and between individuals within a group, the PM allows for the radio communications system resources to be managed efficiently.

The Provisioning Manager (PM) provides the following:

- Configure system-level parameters for call capability.
- Configure system-level parameters for the shared core, such as the parameters for home zone mapping and sub-band restricted ID mapping.
- Configure Console Users, Radios, Talkgroups, Multi-Groups, Agency Groups, and Broadcast Data Agencies.
- Configure access control for users in the PM.
- Configure ZoneWatch windows.
- Configure and manage the attributes relating to a zone such as Aux I/O Configuration, and Consoles.
- Ability to export some configuration data from the PM.
- Ability to import some configuration data to the PM.

Unified Event Manager (UEM)

The UEM provides a central location for managing all radio, transport, and environmental devices on the system. The application automatically discovers devices on the network to determine their real-time status. Color-coded symbols displayed on a topography map provide a geographical and hierarchical representation of the entire network. Physical and Service related maps are presented to give the user an operational status of all the devices on the network and any interruptions in communication to their associated locations. An Active Alarms View is provided to filter through the event summary to quickly pinpoint the highest priority failures. The Maps and Active Alarm View provide the Network Manager the capability to respond to critical failures on the system quickly and efficiently. The UEM allows each user to filter out and customize the pertinent information important to their roles and responsibilities. System components and their status is continually monitored and recorded even when no one is logged on the manager.

Historical Reports

Historical Reports generate reports on system-wide activity as well as individual zone activity. The reports contain statistical data gathered at specific, predefined time intervals. They monitor and analyze information about zones, sites, channels, talkgroups, and users to assist a system manager in understanding how the system is performing; and they are utilized to more efficiently manage resources. Individual reports cannot exceed 16,000 objects (radio users, talkgroups, etc.). Reports can be exported to CSV, HTML, PDF, and XML formats.

Historical Reports Features and Benefits

Feature	Benefit
Real-Time Display	Monitor and analyze information about zones, sites, channels, talkgroups, and users to understand how the system is performing and utilized to more efficiently manage resources.
Reports	Create various types of reports at the zone or system level, organized by system resources to analyze activity and performance.
Data Intervals	Historical data is stored in time-based intervals. For each interval type, the oldest interval in storage is removed as a new interval is added to storage. The timed intervals are defined as follows: - Every 15 minutes for 100 intervals (approximately one day; zone level only) - Hourly for 241 intervals (approximately 10 days; system and zone level) - Daily for 62 intervals (approximately 2 months; system and zone level) - Monthly for 36 months (3 years; system and zone level)
Accessing Data/ Data Exporting	Users can utilize the Report Scheduler window to schedule zone-wide and system-wide reports to occur at specified times, with an output to a printer or data file. Reports can be exported to one of the following formats: - Comma Separated Values (CSV) - HTML - Adobe Portable Document Format (PDF) - Extensible Markup Language (XML)
Data Storage	Statistics are aggregated into detailed and summarized reports on both an individual zone and system-wide basis; they are available on an hourly basis for 10 days, daily for 62 days, and monthly for 1 year.

Radio Control Manager

The optional Radio Control Manager (RCM) application provides the ability to generate radio commands and to display radio events. Users also have the capability to generate RCM reports. Some features of the RCM are:

- ***Dynamic Regrouping*** – Allows a dispatcher or system manager to dynamically program an affiliated radio user to a particular talkgroup. The radio will generate an audible noise indicating to the user that the radio has been regrouped.
- ***Storm Plans*** – Provide the system with an automated, predefined procedure for special or emergency situations.
- ***Selective Radio Inhibit*** – Denies system access to lost or stolen Motorola radios. When a radio is reported missing, a network management terminal operator can send a Selective Radio Inhibit command to the system controller, rendering the radio unit inoperable. Once found, the radio can be reactivated and restored to normal operations over the air.

ZoneWatch

ZoneWatch is an optional feature that provides customizable displays and graphs to monitor real-time communications activity and network health. It is a set of diagnostic tools allowing individuals to make more efficient system management decisions. An administrator defined display of information can be created down to individual unit or talkgroup activity.

- At a glance, provides a real-time snapshot of the system
- Color coded display allows for quick network status indications
- Enables faster identification and resolution of potential issues

Affiliation Display

The Affiliation Display is an optional feature that provides a dynamic view of the sites to which all operating units are currently affiliated, making it easy to track and troubleshoot radios in the system. Provides a dynamic view of

- Sites
- Talkgroups
- Individual Radios

This allows a manager to understand the loading characteristics of their system in real-time. Graphing capabilities are also included.

Dynamic Reports

Dynamic Reports is an optional feature that monitors and reports usage trends in order to improve radio and talkgroup system management. System managers can closely examine what happens during a shift or set period of time: for example, checking the busy count to see if calls are being missed. Dynamic Report recommendations can be made on system expansion and design to improve communication.

Terminal Server

The Terminal Server is a device that provides serial access to Network Management (NM) servers and network transport equipment in the Radio Network Infrastructure (RNI).

The terminal server has a separate direct RS-232 connection to each of its supported devices. In the event of a major failure, the Terminal Server provides dial-up access for troubleshooting. This interface is intended exclusively for Motorola Service personnel.

1.4.3 Network Transport Subsystem

The ASTRO 25 transport core is engineered to meet the performance requirements of a real-time system transporting voice, call control, network management, and ancillary network services. The Transport Network is a closed network. Only Motorola-supplied equipment, applications, and services can be used on the core and site networks.

IP encapsulation across the customer-provided backhaul network is used to transport Radio Network Interface (RNI) traffic. The Wide Area Network (WAN) Transport can optionally provide encryption, as well as redundant links. In addition, Quality of Service (QoS) can be used to distribute voice packets to provide a constant and steady delivery of packets from the source to the destination.

Ethernet Switch

The Enterprise Ethernet Switch (LAN Switch) is used to aggregate all the Ethernet interfaces for all servers, clients, and gateways.

Core Gateway

The core gateway interfaces to the core LAN, providing layer three routing and protocol conversion between the core IP devices and the remote site IP devices.

Site Gateway

The site gateway interfaces to the remote site LAN via one Ethernet connection, and provides layer three routing and protocol conversion between the remote site IP devices and the core site IP devices.

1.4.4 Encryption Capabilities

When it is absolutely critical that communications not be monitored by unauthorized parties, radio systems can be configured with encryption. Encryption ensures only authorized units in the system can listen to transmissions being made. Encrypted calls are protected end-to-end throughout the network.

KVL 4000 Key Variable Loader

The KVL 4000 is Motorola's encryption Key Variable Loader for secure enabled Motorola products. Equipped with the Motorola MC55 handheld, the key loader is outfitted with state-of-the-art features and user interface for increased efficiency and programming flexibility. A large LCD color display, paired with an easy-to-use alphanumeric keypad, enables simple viewing and data entry. Built with legendary Motorola quality and security, the KVL 4000 is built to withstand everyday use in federal and public safety environments.



KVL 4000

KVL 4000 Features and Benefits

The KVL 4000 utilizes the Motorola MC55 handheld computer with large 3.5 inch color display, touch screen interface, and QWERTY keyboard. The device is built to withstand everyday use in federal and public safety environments.

Motorola has included three KVL 4000 units with this proposal with AES and DES-OFB encryptions.

KVL 4000 Features

Feature	Description
Automatic key generation	- Automatically generates random keys for any algorithm. - Can auto-generate a single key or a bulk set of keys.
Enhanced security	- FIPS 140-2 Level 3 provides the highest level of security for your data. - User timeout automatically logs out the user after a specified period of inactivity. - User and administrator authentication allows users and administrators to perform and restrict firmware upgrades, changes, and key management.
Dead battery operation	Ability to operate the KVL, including key management and key downloading while charging.
Key Management Facility support	With store and forward capability, the encryption keys are downloaded from the KMF, stored in the KVL, and delivered to the end units.

1.4.5 MCC7500 Dispatch Console

Motorola's MCC 7500 Dispatch Console is Motorola's mission-critical IP high-tier radio dispatch console system. The MCC 7500 Dispatch Console features an intuitive, easy-to-use Graphical User Interface (GUI) that runs under a Microsoft Windows operating system, utilizing the industry-standard PC platform. MCC 7500's highly recognizable icons are designed to reduce user training time and allow dispatchers to manage information more productively.

Designed for effective, flexible dispatch communications, the MCC 7500 Dispatch Console can provide a range of valuable features:

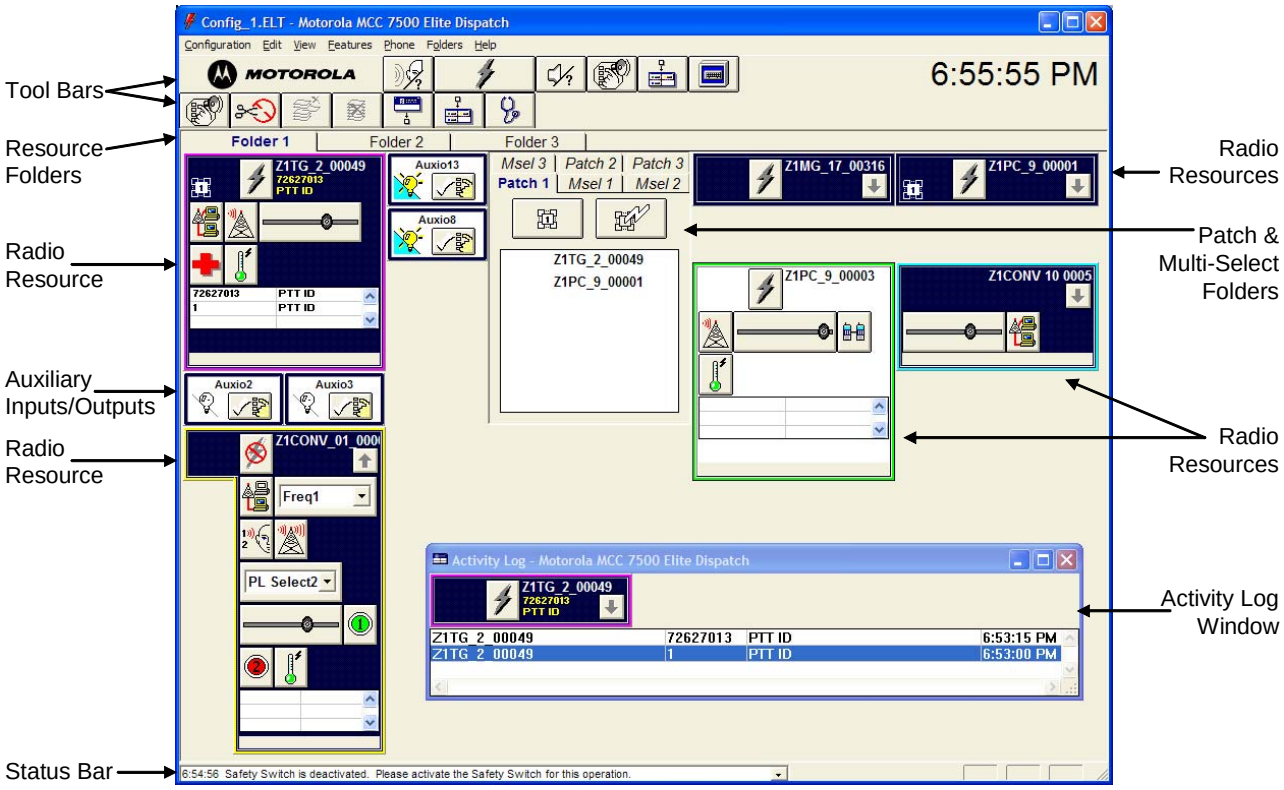
- Seamless integration with ASTRO 25 Trunking system.
- IP Network—MCC 7500 supports the IP protocols of the ASTRO 25 system's transport network.
- End-to-End Encryption—Encryption and decryption occurs in the dispatch consoles, allowing true end-to-end encryption in the radio system.
- Centralized System Management—the MCC 7500 console system is configured and managed by the ASTRO 25 system's configuration manager, fault manager and performance reporting applications. This provides City of Joplin with a single point for configuring and managing the entire radio system, including the console portion.
- User-Friendly—MCC 7500's environment features the familiar standards used by other Windows programs, worldwide.
- Screen layout, menus and icons are easy to understand and quickly recognizable.
- Each dispatcher's configuration can be customized via the Elite Admin application.
- Elite Dispatch GUI uses a simple point-and-click response. The dispatcher has the choice of using a mouse, trackball or optional touch screen and the keyboard is not required for day-to-day operations.

1.4.5.1 Elite Dispatch Graphical User Interface

The Motorola MCC 7500 dispatch console uses the same Elite Dispatch graphical user interface (GUI) used in the CENTRACOM GOLD ELITE Console for displaying information to and accepting

commands from the dispatcher. The Elite Dispatch GUI is efficient, easy to use, and intuitive, having been refined and proven through years of use in public safety dispatch centers around the world.

Example of the MCC 7500 Elite Dispatch GUI is shown below:



1.4.5.2 MCC 7500 System Components

This section discusses the various components that make up the proposed MCC 7500 Dispatch Console system. These components are connected together and to the rest of the ASTRO 25 system on an IP network via console site routers and switches.

There are main components of a Motorola MCC 7500 system:

- Operator Positions
  - Personal Computer
  - Voice Processer Module (VPM)
- Auxiliary Input/Outputs
- Conventional Channel Gateway
- Conventional Site Controller (CSC)

1.4.5.3 Operator Position Components

MCC 7500 operator positions connect directly to the radio system's IP transport network. Audio processing, encryption, and switching intelligence for dispatch are performed within each software-based operator position, without additional centralized electronics.

An MCC 7500 operator position consists of a computer, a Voice Processing Module (VPM), one select speaker, up to three unselect speakers, a desktop gooseneck microphone and/or headset jack box with in-line PTT amplifier and headset, and optional footswitch.



MCC 7500 Operator Position Components

Personal Computer (PC)

The dispatch console hardware is based on a commercially available personal computer using Microsoft Windows as the operating system. The dispatch console software uses the Elite Dispatch graphical user interface (GUI) for displaying information to and accepting commands from the dispatcher. The Elite Dispatch GUI is efficient, easy to use, and intuitive, having been refined and proven through years of use in public safety dispatch centers around the world.

Voice Processor Module (VPM)

The VPM provides vocoding and audio processing services for the dispatch console. It connects to the console site LAN switch and communicates with the dispatch console PC via Ethernet. Each operator position includes a PC and a dedicated VPM. The VPM also provides connections for analog devices to be connected to the digital console.

The VPM has connectors for the following devices:

- One (1) desktop microphone
- Two (2) headset jacks
- Up to Eight (8) desktop speakers
- Logging recorder
- Radio instant recall recorder
- External telephone set
- External paging encoder
- Footswitch
- Generic transmit audio input

Some of the connectors listed above can be used to provide audio inputs and outputs for connecting other types of dispatch consoles to the Motorola radio system in conjunction with the Motorola MCC 7500 Dispatch APIs.

The secure card in the VPM provides encryption and decryption services for the dispatch console. It is capable of supporting multiple, simultaneous encryption/decryption sessions using multiple algorithms and multiple secure keys.

1.4.5.4 SDM 3000 Auxiliary Input/Output

An Auxiliary Input/Output server enables console operators to control and monitor external devices, such as doors and lights, from the console user interface. Multiple dispatch consoles anywhere in the

network may monitor and control the same relay output and/or external inputs. Changes are indicated across all dispatch consoles simultaneously. Customizable graphic icons are also used to provide a visual indication of both the function and state of external inputs.

The contact closures and input buffers required to interface to these devices are housed in Remote Terminal Units (RTUs). These RTUs can be physically located close to where they are needed, at any console site or RF site. The dispatch consoles and RTUs communicate with each other across the radio system's IP transport network. Individual relay outputs can be configured so that they require a safety switch to be pressed before they respond to any commands from the dispatch console user.

The following Aux I/O configurations are supported.

Aux I/O Supported Configurations

Aux I/O Configuration	Description
Momentary Input	This is an input where the user interface always shows the true state of the input.
Latched Input	This is an input where the user interface does not necessarily show the true state of the input. When the input goes active, the user interface shows the state as active. The display will continue to show the state as active even if the input changes to the inactive state. A dispatch console user must manually reset the display to return it to the inactive state.
Momentary Output	This output relay is activated when the dispatch console user presses the button on the user interface and deactivated when the dispatch console user releases the button.
Latched Output	This output relay changes state only when the dispatch console user presses the button.
Interlocked Latched Output	This latched output relay is part of a group of latched output relays. Only one of the relays in the group may be active at a time. Interlocked relays work in a "break before make" fashion; that is, the previously active relay is deactivated before the new relay is activated.

1.4.5.5 GGM 8000 Conventional Channel Gateway

Conventional Channel Gateways (CCGWs) are used to interface analog and ASTRO 25 conventional channels to the ASTRO 25 radio system infrastructure. CCGWs provide 4-wire analog interfaces for analog channels and V.24 and IP digital interfaces for ASTRO 25 conventional channels. Once these channels are connected to the network, dispatchers are able to monitor and transmit on the channel.

1.4.5.6 GCP 8000 Conventional Site Controller

The conventional site controller allows dispatch console users to continue to access and control local conventional channels if connectivity to the radio system's controller is lost. This mode of operation is often called "fallback operation" or "site conventional operation". The conventional site controller is comprised of the GCP 8000 site controller hardware with different software to provide the conventional capabilities. When used as a conventional site controller, the GCP 8000 site controller is outfitted with a single site controller module rather than two site controller modules.

Only one conventional site controller is required per console site. This single conventional site controller is capable of supporting the full set of dispatch consoles, archiving interface servers and CCGWs that can be placed in a console site or conventional subsystem.

1.5 SUMMARY

Motorola is pleased to offer City of Joplin a complete communication solution with many enhancements and flexibility to allow users the ability to do their job in the most efficient way possible. The proposed solution is based upon Motorola's industry leading ASTRO 25 IP platform and P25 compliant technology to meet the public safety communication needs.

Our ASTRO 25 IP solution provides scalability, flexible system architecture, unparalleled network management, and easy migration to future capabilities. As need arises, the system can be easily expanded to include additional sites and channels.

SECTION 2

SYSTEM DIAGRAMS

System Diagrams are included on the pages that follow.

CEN VMS

CEN

Border Router

DMZ

RNI-DMZ FW

ISSI 8000 FW

Terminal Server

GGSN

Virtual Servers

VMS01
ZC01, Zone DC, Prov Mgr, ZSS, ATR, BAR

VMS02
ZC02, System DC, ZDS, UEM, License Mgr

Direct Attached Storage (DAS)

HP3800-48 Ethernet Switches

NM Client

Gateway Routers

Core Routers

Backhaul Switches

Two Existing ASR Sites

Ethernet Backhaul

Remote NM Site

Co-located MCC7500 Console

MOTOROLA

PROJECT: CITY OF JOPLIN, MO				
TITLE: ASTRO 25 L2 CORE BLOCK DIAGRAM				
CONTRACT:	ENGINEER: D. RHEE	PM:	SCALE: NONE	SIZE:
PROGRAM:	DRAWN:	CHECKED:	SHEET: 1 OF 1	REV:
FILE NAME:	DATE: 3 AUG 2016	CODE IDENT:	DRAWING NO:	

L2 Core

Site Gateway #1

Site Gateway #2

Site LAN Switch #1

Site LAN Switch #2

Conv Site Controller

To Punch Blocks

AUX I/O

CCGW #1

To Customer's Five (5)
Existing Consolettes

Archiving Interface
Server

KVM

Control Room
Firewall

Control Room
CEN Switch

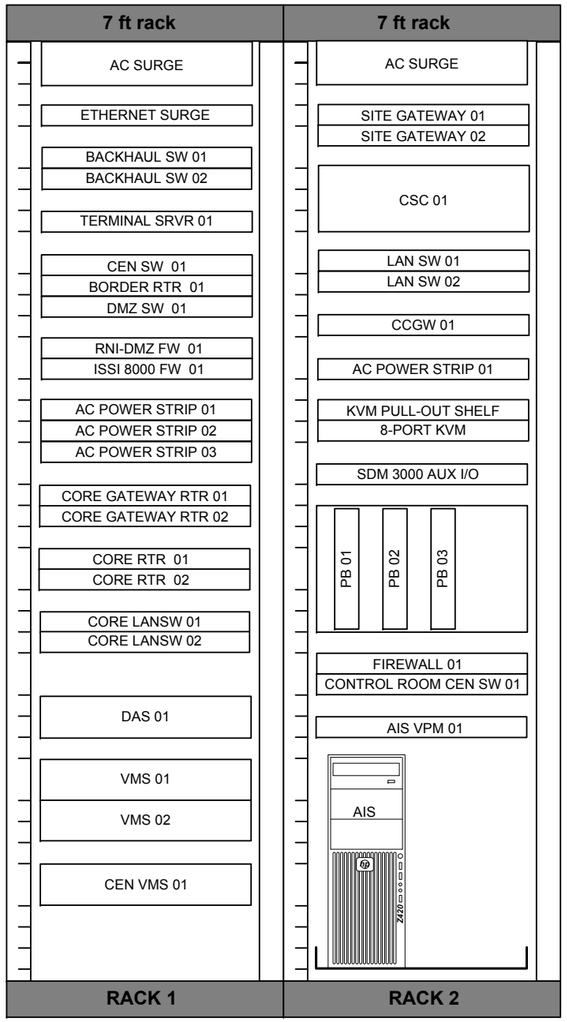
To Customer Provided
IP Logging System

MCC7500 Dispatch
#1

MCC7500 Dispatch
#5

MOTOROLA

PROJECT: CITY OF JOPLIN, MO				
TITLE: MCC7500 DISPATCH SITE BLOCK DIAGRAM				
CONTRACT:	ENGINEER: D. RHEE	PM:	SCALE: NONE	SIZE:
PROGRAM:	DRAWN:	CHECKED:	SHEET: 1 OF 1	REV:
FILE NAME:	DATE: 3 AUG 2016	CODE IDENT:	DRAWING NO:	



L2 Core **Dispatch**



NM Client (Local)



NM Client (Remote)

MOTOROLA

PROJECT: CITY OF JOPLIN, MO				
TITLE: L2 CORE AND MCC7500 DISPATCH EQUIPMENT RACK DIAGRAM				
CONTRACT:	ENGINEER: D. RHEE	PM:	SCALE: NONE	SIZE:
PROGRAM:	DRAWN:	CHECKED:	SHEET: 1 OF 1	REV:
FILE NAME:	DATE: 3 AUG 2016	CODE IDENT:	DRAWING NO:	

EQUIPMENT LIST

QTY	NOMENCLATURE	DESCRIPTION
1	SQM01SUM0274	SINGLE ZONE TRUNKED L CORE
1	CA02882AA	ADD: REDUNDANT CORE
1	CA01663AB	ADD: RACK
1	UA00153AA	ADD: ASTRO 25 FDMA SITE LICENSE
1	UA00156AA	ADD: MCC7500 CONSOLE LICENSES (QTY 5)
2	UA00152AA	ADD:500 RADIO USER LICENSES
1	UA00136AA	ADD: UNIFIED NETWORK CONFIGURATOR (UNC)
1	UA00147AA	ADD: PROVISIONING MANAGER
1	UA00144AA	ADD: ZONE HISTORICAL RPTS
2	UA00151AA	ADD: AFFLIATION USER RPTS
2	UA00150AA	ADD: DYNAMIC REPORTS
1	UA00146AA	ADD: UNIFIED EVENT MANAGER (UEM)
1	UA00141AA	ADD: ZONEWATCH GRID & CTRL
1	CA01750AA	ADD: TERMINAL SERVER
13	CA02193AA	ADD: ANTI-MALWARE DEF UPDATE LIC
1	CLN1856	2620-24 ETHERNET SWITCH
2	TT2833	COMPUTER, Z440 WORKSTATION WINDOWS 7 (NON RETURNABLE)
2	T8206	ASTRO CLIENT APPL SW 7.16
2	DSTG191	TECH GLOBAL EVOLUTION SERIES 19INCH NON TOUCH
1	SQM01SUM0205	GGM 8000 GATEWAY
1	CA01616AA	ADD: AC POWER
1	CLN1856	2620-24 ETHERNET SWITCH
1	DVN4046B	MASTER SYSTEM KEY STARTER KIT
1	DS11011188	PDU, 120/240 SPLIT PH OR N+1 REDUNDANT, 60A MAX PER PHASE, SIX DEDICAT
12	DS3750297	BREAKER, 15 AMP, CB UL 489 LISTED FOR AC EDGE II
3	BLN6200	AC POWER STRIP, 6 OUTLET
1	DSCPX1101984	SPD, RJ-45 CONN (16) LINE 10/100BT ETHERNET 11VPL PINS (1,2) & (3,6)
1	B1905	MCC 7500 ASTRO 25 SOFTWARE
5	B1933	MOTOROLA VOICE PROCESSOR MODULE
5	CA01642AA	ADD: MCC 7500 BASIC CONSOLE FUNCTIONALITY SOFTWARE LICENSE
5	CA01644AA	ADD: MCC 7500 /MCC 7100 ADV CONVL OPERATION
5	CA01643AA	ADD: MCC 7500 / MCC 7100 TRUNKING OPERATION
5	CA00140AA	ADD: AC LINE CORD, NORTH AMERICAN
5	CA00147AF	ADD: MCC 7500 SECURE OPERATION
5	CA00143AC	ADD: DES-OFB ALGORITHM

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to the restrictions on the cover page.

QTY	NOMENCLATURE	DESCRIPTION
5	CA00182AB	ADD: AES ALGORITHM
5	DSTG221	TECH GLOBAL EVOLUTION SERIES 22INCH NON TOUCH
5	TT2833	COMPUTER, Z440 WORKSTATION WINDOWS 7 (NON RETURNABLE)
5	T7449	WINDOWS SUPPLEMENTAL TRANS CONFIG
10	B1912	MCC SERIES DESKTOP SPEAKER
5	B1914	MCC SERIES DESKTOP GOOSENECK MICROPHONE
5	B1913	MCC SERIES HEADSET JACK
5	RLN6098	HDST MODULE BASE W/PTT, 15' CBL
10	RMN5078B	SUPRAPLUS NC SINGLE MUFF HEADSET
5	DSTWIN6328A	PROVIDES ONE DUAL PEDAL FOOTSWITCH FOR USE WITH MOTOROLA MCC 7500 DISP
5	T7885	MCAFEE WINDOWS AV CLIENT
5	DDN2090	DUAL IRR SW USB HASP W LICENSE, SOUND CARD, & SPKRS (V47)
2	CLN1856	2620-24 ETHERNET SWITCH
2	SQM01SUM0205	GGM 8000 GATEWAY
2	CA01616AA	ADD: AC POWER
1	F4543	SITE MANAGER BASIC
1	VA00874	ADD: AUX I-O SERV FW CURR ASTRO REL
1	V266	ADD: 90VAC TO 260VAC PS TO SM
3	V592	AAD TERM BLCK & CONN WI
1	T7038	GCP 8000 SITE CONTROLLER
1	CA00303AA	ADD: QTY (1) SITE CONTROLLER
1	X153AW	ADD: RACK MOUNT HARDWARE
1	CA01136AA	MCC 7500 CONVEN SITE OPER
1	SQM01SUM0205	GGM 8000 GATEWAY
1	CA01616AA	ADD: AC POWER
1	CA02086AA	ADD: HIGH DENSITY ENH CONV GATEWAY
1	B1933	MOTOROLA VOICE PROCESSOR MODULE
1	CA00288AB	ADD: MCC 7500 ARCHIVING INTERFACE SERVER SOFTWARE LICENSE
1	CA00140AA	ADD: AC LINE CORD, NORTH AMERICAN
1	CA00147AF	ADD: MCC 7500 SECURE OPERATION
1	CA00182AB	ADD: AES ALGORITHM
1	CA00143AC	ADD: DES-OFB ALGORITHM
1	T7885	MCAFEE WINDOWS AV CLIENT
1	TT2833	COMPUTER, Z440 WORKSTATION WINDOWS 7 (NON RETURNABLE)
1	DDN9748	19 INCH BLACK SHELF
1	T7449	WINDOWS SUPPLEMENTAL TRANS CONFIG
1	DSB020U0819IP	NETDIRECTOR 19IN CONSOLE KVM WIITH BUILT-IN IP ACCESS - 8 PORT
1	DSB019000	TWO-POST RACKMOUNT BRACKET FOR B021 AND B020 SERIES KVM SWITCH CONSOLE

QTY	NOMENCLATURE	DESCRIPTION
2	DSP778006	CABLE, KVM USB-PS2 COMBO KIT FOR B020/22-U08/16 SERIES SWITCHES 6 FT
1	T8126	FORTINET FIREWALL APPLIANCE
1	CLN1856	2620-24 ETHERNET SWITCH
1	THN1012	RACK 7' OPEN
1	DS11011188	PDU, 120/240 SPLIT PH OR N+1 REDUNDANT, 60A MAX PER PHASE, SIX DEDICAT
6	DS3750296	BREAKER, 10 AMP, CB UL 489 LISTED FOR AC EDGE II
6	DS3750297	BREAKER, 15 AMP, CB UL 489 LISTED FOR AC EDGE II
1	BLN6200	AC POWER STRIP, 6 OUTLET
1	T7537	KVL 4000 KEYLOADER
1	U239AD	ADD: ASTRO 25 MODE
1	X795AJ	ADD: ASN MODE
1	CA01598AA	ADD: AC LINE CORD US
1	CA00182AP	ADD: AES ENCRYPTION SOFTWARE
1	X423AF	ADD: DES/DES-XL/DES-OFB ENCRYPTION
1	C543	ADD: CABLE FOR RNC, DIU, MGEG
1	CA01603AA	ADD: USB COMM/CHARGE CABLE W/ CUP
1	C724	CABLE, KEYLOAD
1	C725AA	ADD: KEYLOAD CABLE FOR APX PORTABLE
1	HKN6182	KEYLOADING CABLE ADAPTER (GCAI)
1	TRN7414	CBL ADAPTER SPECTRA/SPECTRO
1	TKN8531C	CABLE FOR RNC, DIU MGEG
1	T7140	G-SERIES SOFTWARE UPGRADE
9	CA01116AA	ADD: SITE REPEATER BR SW UPGRADE
2	CA02212BA	ADD: SITE RPTR SC SW UPGRD VOICE
1	T7140	G-SERIES SOFTWARE UPGRADE
4	CA01116AA	ADD: SITE REPEATER BR SW UPGRADE
2	CA02212BA	ADD: SITE RPTR SC SW UPGRD VOICE
8	DS2750050000	RICI-T1 FAST ETHERNET TO T1 W/ EXTENDED TEMPERATURE RANGE
4	DS1900640000	RM-33-2: RACK MOUNT KIT FOR ONE OR TWO UNITS
1	T7776	ISSI 8000 / CSSI 8000 UPGRAGE Software Licenses
1	UA00004AA	ADD: ISSI Manual Roaming License
1	DLN6972	FRU: DL380 G9 POWER SUPPLY
1	DLN6970	FRU: DL380 G9 HARD DRIVE
1	DLN6973	FRU: DL380 G9 FAN
1	DLN6971	FRU: DL380 G9 DVD DRIVE
1	DLN6880	DAS - CHASSIS ONLY
1	DLN6878	DAS - 600 GB SAS HARD DRIVE
1	DLN6978	FRU: DOTHILL 4524 RAID I/O CONTROLLER MODULE
1	DLN6867	DAS POWER SUPPLY

QTY	NOMENCLATURE	DESCRIPTION
1	CKN6967	CABLE, DATA,MINI-SAS TO MINI-SAS HD, LENGTH 1M
1	SQM01SUM0205	GGM 8000 GATEWAY
1	CA01616AA	ADD: AC POWER
1	CLN1856	2620-24 ETHERNET SWITCH
1	B1912	MCC SERIES DESKTOP SPEAKER
1	B1914	MCC SERIES DESKTOP GOOSENECK MICROPHONE
1	B1913	MCC SERIES HEADSET JACK
1	DSTWIN6328A	PROVIDES ONE DUAL PEDAL FOOTSWITCH FOR USE WITH MOTOROLA MCC 7500 DISP
1	TT2833	COMPUTER, Z440 WORKSTATION WINDOWS 7 (NON RETURNABLE)
1	SQM01SUM0205	GGM 8000 GATEWAY
1	CA01616AA	ADD: AC POWER
1	CA02086AA	ADD: HIGH DENSITY ENH CONV GATEWAY
1	DLN6966	FRU: GCP 8000/GCM 8000/GPB 8000
1	DLN6781	FRU: POWER SUPPLY
1	DLN6898	FRU: FAN MODULE
1	B1934	MCC 7500 VOICE PROCESSOR MODULE FRU
1	CA00147AF	ADD: MCC 7500 SECURE OPERATION
1	CA00245AA	ADD: ADP ALGORITHM
1	CA00143AC	ADD: DES-OFB ALGORITHM
1	01009513003	POWER SUPPLY ADAPTOR,PWR SPLY 108W AC INP 12VDC OUT
1	30009351001	DC CABLE ASSY
1	3082933N08	GR500 AC POWER CORD
1	DS2750050000	RICI-T1 FAST ETHERNET TO T1 W/ EXTENDED TEMPERATURE RANGE

Radio Site Channel Addition Equipment List

QTY	NOMENCLATURE	DESCRIPTION
1	T7071	GTR 8000 EXPANDABLE SITE SUB-SYSTEM CHANNEL ADDITION UPGRADE
1	CA00855AA	ADD: 700/800 MHZ
1	X301AE	ADD: QTY (1) GTR 8000 BASE RADIO
1	X591AE	ENH: ASTRO 25 SITE REPEATER SW

SECTION 4

STATEMENT OF WORK

4.1 OVERVIEW

This Statement of Work (SOW) describes the deliverables to be furnished to City of Joplin. The tasks described herein will be performed by Motorola, its subcontractors, and City of Joplin to implement the solution described in the System Description. It describes the actual work involved in installation, identifies the installation standards to be followed, and clarifies the responsibilities for both Motorola and Customer during the project implementation. Specifically, this SOW provides:

- A summary of the phases and tasks to be completed within the project lifecycle.
- A list of the deliverables associated with the project.
- A description of the responsibilities for both Motorola and Customer.
- The qualifications and assumptions taken into consideration during the development of this project.

This SOW provides the most current understanding of the work required by both parties to ensure a successful project implementation. In particular, Motorola has made assumptions of the sites to be used for the new system. Should any of the sites change, a revision to the SOW and associated pricing will be required. It is understood that this SOW is a working document, and that it will be revised as needed to incorporate any changes associated with contract negotiations, Contract Design Review (CDR), and any other change orders that may occur during the execution of the project.

4.2 ASSUMPTIONS

Motorola has based the system design on information provided by City of Joplin and an analysis of their system requirements. All assumptions have been listed below for review. Should Motorola's assumptions be deemed incorrect or not agreeable to City of Joplin, a revised proposal with the necessary changes and adjusted costs may be required. Changes to the equipment or scope of the project after contract may require a change order

- User training is not required.
- Site development is not required.
- If necessary, City of Joplin will work with existing logging recorder vendor to ensure proper operation and integration with the Motorola supplied AIS.
- All work is to be performed during normal work hours, Monday through Friday 8:00 a.m. to 5:00 p.m., State holidays excluded.

4.3 CONTRACT

4.3.1 Contract Award (Milestone)

- The Customer and Motorola execute the contract and both parties receive all the necessary documentation.

4.3.2 Contract Administration

Motorola Responsibilities:

- Assign a Project Manager, as the single point of contact with authority to make project decisions.
- Assign resources necessary for project implementation.
- Set up the project in the Motorola information system.
- Schedule the project kickoff meeting with the Customer.

Customer Responsibilities:

- Assign a Project Manager, or similar single point of contact responsible for Customer-signed approvals.
- Assign other resources necessary to ensure completion of project tasks for which City of Joplin is responsible.

Completion Criteria:

- Motorola internal processes are set up for project management.
- Both Motorola and City of Joplin assign all required resources.
- Project kickoff meeting is scheduled.

4.3.3 Project Kickoff

Motorola Responsibilities:

- Conduct a project kickoff meeting during the CDR phase of the project.
- Ensure key project team participants attend the meeting.
- Introduce all project participants attending the meeting.
- Review the roles of the project participants to identify communication flows and decision-making authority between project participants.
- Review the overall project scope and objectives with City of Joplin.
- Review the resource and scheduling requirements with City of Joplin.
- Review the Project Schedule with City of Joplin to address upcoming milestones and/or events.
- Review the teams' interactions (Motorola and City of Joplin), meetings, reports, milestone acceptance, and City of Joplin's participation in particular phases.

Customer Responsibilities:

- City of Joplin's key project team participants attend the meeting.
- Review Motorola and Customer responsibilities.

Completion Criteria:

- Project kickoff meeting completed.
- Meeting notes identify the next action items.

4.4 PROJECT ADMINISTRATION

4.4.1 Project Status Meetings

Motorola Responsibilities:

- Once a month, Motorola Project Manager, or designee, will attend all project status meetings with City of Joplin, as determined during the CDR.

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- Record the meeting minutes and supply the report.
- The agenda will include the following:
  - Overall project status compared to the Project Schedule.
  - Product or service related issues that may affect the Project Schedule.
  - Status of the action items and the responsibilities associated with them, in accordance with the Project Schedule.
  - Any miscellaneous concerns of either City of Joplin or Motorola.

Customer Responsibilities:

- Attend meetings.
- Respond to issues in a timely manner.

Completion Criteria:

- Completion of the meetings and submission of meeting minutes.

4.4.2 Progress Milestone Submittal

Motorola Responsibilities:

- Submit progress (non-payment) milestone completion certificate/documentation.

Customer Responsibilities:

- Approve milestone, which will signify confirmation of completion of the work associated with the scheduled task.

Completion Criteria:

- City of Joplin approval of the Milestone Completion document(s).

4.5 CONTRACT DESIGN REVIEW

4.5.1 Review Contract Design

Motorola Responsibilities:

- Meet with City of Joplin project team.
- Review the operational requirements and the impact of those requirements on various equipment configurations.
- Establish a defined baseline for the system design and identify any special product requirements and their impact on system implementation.
- Review the System Design, Statement of Work, Project Schedule, and Acceptance Test Plans, and update the contract documents accordingly.
- Discuss the proposed Cutover Plan and methods to document a detailed procedure.
- Submit design documents to City of Joplin for approval. These documents form the basis of the system, which Motorola will manufacture, assemble, stage, and install.
- Prepare equipment layout plans for staging.
- Provide minimum acceptable performance specifications for microwave, fiber, or copper links.
- Establish demarcation point (supplied by the Motorola system engineer) to define the connection point between the Motorola-supplied equipment and City of Joplin-supplied link(s) and external interfaces. (if City of Joplin is responsible for supplying links)
- If necessary, advise city of Joplin on site development plan.

- Conduct site evaluations to capture site details of the system design and to determine site readiness.
- Determine each site's ability to accommodate proposed equipment based upon physical capacity.
- Prepare Site Evaluation Report that summarizes findings of above-described site evaluations.
- If, for any reason, any of the proposed sites cannot be utilized due to reasons beyond Motorola's control, the costs associated with site changes or delays including, but not limited to, re-engineering, site zoning, site permitting, schedule delays, site abnormalities, re-mobilization, etc., will be paid for by City of Joplin and documented through the change order process.

Customer Responsibilities:

- City of Joplin's key project team participants attend the meeting.
- Make timely decisions, according to the Project Schedule.

Completion Criteria:

- Complete Design Documentation, which may include updated System Description, Equipment List, system drawings, or other documents applicable to the project.
- Incorporate any deviations from the proposed system into the contract documents accordingly.
- The system design is "frozen" in preparation for subsequent project phases such as Order Processing and Manufacturing.
- A Change Order is executed in accordance with all material changes resulting from the Design Review to the contract.

4.6 CHANGE ORDER PROCESS

- Either Party may request changes within the general scope of this Agreement. If a requested change causes an increase or decrease in the cost, change in system configuration or adds time to the project's timeline required to perform this Agreement, the Parties will agree to an equitable adjustment of the Contract Price, Performance Schedule, or both, and will reflect the adjustment in a change order. Neither Party is obligated to perform requested changes unless both Parties execute a written change order.

Example - Change Order Form



Microsoft Office
Word 97 - 2003 Docu

4.7 ORDER PROCESSING

4.7.1 Process Equipment List

Motorola Responsibilities:

- Validate Equipment List by checking for valid model numbers, versions, compatible options to main equipment, and delivery data.
- Enter order into Motorola's Customer Order Fulfillment (COF) system.

- Create Ship Views, to confirm with City of Joplin the secure storage location(s) to which the equipment will ship. Ship Views are the mailing labels that carry complete equipment shipping information, which direct the timing, method of shipment, and ship path for ultimate destination receipt.
- Create equipment orders.
- Reconcile the equipment list(s) to the Contract.
- Procure third-party equipment if applicable.

Customer Responsibilities:

- Approve shipping location(s).
- Complete and provide Tax Certificate information verifying tax status of shipping location.

Completion Criteria:

- Verify that the Equipment List contains the correct model numbers, version, options, and delivery data.
- Trial validation completed.
- Bridge the equipment order to the manufacturing facility.

4.8 MANUFACTURING AND STAGING

4.8.1 Manufacture Motorola Fixed Network Equipment

Motorola Responsibilities:

- Manufacture the Fixed Network Equipment (FNE) necessary for the system based on equipment order.

Customer Responsibilities:

- None.

Completion Criteria:

- FNE shipped to either the field or the staging facility.

4.8.2 Manufacture Non-Motorola Equipment

Motorola Responsibilities:

- Procure non-Motorola equipment necessary for the system based on equipment order.

Customer Responsibilities:

- None.

Completion Criteria:

- Ship non-Motorola manufactured equipment to the field and/or the staging facility.

4.8.3 Ship to Staging (Milestone)

- Ship all equipment needed for staging to Motorola's factory staging facility in E, Illinois [Customer Center for Solutions Integration (CCSi)].

4.8.4 Stage System

Motorola Responsibilities:

- Set up and rack the system equipment on a site-by-site basis, as it will be configured in the field at each of the transmitter/receiver sites.
- Cut and label cables according to the approved CDR documentation.
- Label the cables with to/from information to specify interconnection for field installation and future servicing needs.
- Complete the cabling/connecting of the subsystems to each other ("connectorization" of the subsystems).
- Assemble required subsystems to assure system functionality.
- Power up, program, and test all staged equipment.
- Confirm system configuration and software compatibility to the existing system.
- Load application parameters on all equipment according to input from Systems Engineering.
- Complete programming of the Fixed Network Equipment.
- Program the approved templates into a radio-programming template tool.
- Complete programming of sample Subscriber units.
- Inventory the equipment with serial numbers and installation references.
- Complete system documentation.
- Third party subsystems may be staged at the manufacturer's facilities and integrated in the field.
- Provide a Factory Acceptance Test Plan.

Customer Responsibilities:

- Provide information on existing system interfaces as may be required.
- Provide information on room layouts or other information necessary for the assembly to meet field conditions.
- Review and approve proposed Factory Acceptance Test Plan.

Completion Criteria:

- System staging completed and ready for testing.

4.8.5 Perform Staging Acceptance Test Procedures

Motorola Responsibilities:

- Test and validate system software and features.
- Functional testing of standard system features.
- Conduct site and system level testing.
- Power-up site equipment and perform standardized functionality tests.
- Perform system burn-in 24 hours a day during staging to isolate and capture any defects.

Customer Responsibilities:

- None

Completion Criteria:

- System passes all staging test and results are documented.

4.8.6 Ship Equipment to Field

Motorola Responsibilities:

- Pack system for shipment to final destination.
- Arrange for shipment to the field.

Customer Responsibilities:

- None.

Completion Criteria:

- Equipment ready for shipment to the field.

4.8.7 CCSi Ship Acceptance (Milestone)

- All equipment shipped to the field.

4.9 DEVELOP FLEETMAP

Motorola Responsibilities:

- Schedule required meeting(s) with the appropriate Customer representative(s)/agency(ies).
- Meet with City of Joplin's user groups.
- Provide details on the features and functionality of the Motorola equipment/system.
- Work with City of Joplin and participating agency(ies) to develop and obtain approval of the fleetmap for the system.
- Program the infrastructure equipment, subscribers, terminals, and any other radio system FNE, based on fleetmap.
- Any changes requested by City of Joplin, after approval of fleetmap and template definitions, will require updating the contract documents accordingly.
- Provide guidelines for development of fleetmap to customer on projects where subscriber units are being purchased/reprogrammed outside the scope of this project.

Customer Responsibilities:

- Designate a representative for the user groups, to make timely decisions on their behalf.
- Identify City of Joplin's System Manager who will set up a "steering" committee consisting of various members from user groups.
- The System Manager, with the help of the steering committee, will be responsible for setting standardized system management and operational policies (SOP) that will apply to all users.
- A sample of SOP committee decisions includes:
  - User Access Management Protocol
  - User Database Management Protocol
  - System Security Protocol
  - Subscriber Radio Standards
- Configure, Manage, and Control the Fleetmap Database.
  - User group reviews its radio standard operational policies and then determines what modifications will be required, if any.
  - Create a "Console Dispatch and Radio Programming Policy" to decide how each Subscriber group will operate on the system and what features will be activated.
  - User group representative(s) makes Fleetmap programming decisions.
- Complete the initial fleetmapping process prior to staging of the system.

Completion Criteria:

- Fleetmap requirements completed and approved by City of Joplin.

4.10 CIVIL WORK FOR CITY OF JOPLIN-PROVIDED FACILITIES

Motorola Responsibilities:

- Provide electrical requirements for each equipment rack to be installed in City of Joplin-provided facilities.
- Provide heat load for each equipment rack to be installed in City of Joplin-provided facilities.
- Extend customer provided electrical to Motorola equipment and terminate at the OP8 or Cabinet electric panel.

Customer Responsibilities:

- If applicable and based on local jurisdictional authority, City of Joplin will be responsible for any installation or up-grades of the Critical Operation Power Systems in order to comply with NFPA 70, Article 708.
- Secure site lease/ownership, zoning, permits, regulatory approvals, easements, power, and Telco connections.
- Provide clear and stable access to the sites for transporting electronics and other materials. Sufficient site access must be available for trucks to deliver materials under their own power and for personnel to move materials to the facility without assistance from special equipment.
- Supply adequately sized electrical service, backup power (UPS, generator, batteries, etc.) including the installation of conduit, circuit breakers, outlets, etc., at each equipment location.
- Provide AC power to the demarcation point(s) indicated in the documentation including the associated electrical service and wiring (conduit, circuit breakers, etc.).
- Provide adequate HVAC, grounding, lighting, cable routing, and surge protection (also, among existing and Motorola-provided equipment) based upon Motorola's Standards and Guidelines for Communication Sites (R56). Ceiling (minimum 9 feet) and cable tray heights (minimum 8 feet) in the equipment rooms in order to accommodate 7-foot, 6-inch equipment racks.
- Provide floor space and desk space for the System equipment at City of Joplin-provided facilities. Each rack shall be provided a minimum of 24-inch x 24-inch footprint with 36-inch clearance in the front and back.
- Bring grounding system up to Motorola's R56 standards and supply a single point system ground, of 5 ohms or less, to be used on all FNE supplied under the Contract. Supply grounding tie point within 10 feet from the Motorola-supplied equipment.
- Provide obstruction-free area for the cable run between the demarcation point and the communications equipment.
- Resolve any environmental issues including, but not limited to, asbestos, structural integrity (rooftop, water tank, tower, etc.) of the site, and any other building risks. (Resolve environmental or hazardous material issues).
- Supply all permits as contractually required.
- Supply interior building cable trays, raceways, conduits, and wire supports.
- Supply engineering and drafting as required for modifications to existing building drawings for site construction.
- Pay for usage costs of power and generator fueling, both during the construction and installation effort, and on an ongoing basis.
- Complete all customer deliverables in accordance within the approved project schedule.

Completion Criteria:

- All sites are ready for equipment installations in compliance with Motorola's R56 standards.

4.11 SYSTEM INSTALLATION

4.11.1 Install Fixed Network Equipment

Motorola Responsibilities:

- Motorola will be responsible for the installation of all fixed equipment contained in the equipment list and outlined in the System Description based upon the agreed to floor plans, at the sites where the physical facility improvement is complete and the site is ready for installation. All equipment will be properly secured to the floor and installed in a neat and professional manner, employing a standard of workmanship consistent with its own R-56 installation standards and in compliance with applicable National Electrical Code (NEC), EIA, Federal Aviation Administration (FAA) and FCC standards and regulations.
- For installation of the fixed equipment at the various sites, Motorola will furnish all cables needed to connect the Motorola supplied equipment to the power panels or receptacles and the audio/control line connection point.
- During field installation of the equipment, any required changes to the installation will be noted and assembled with the final 'as-built' documentation of the system.
- Receive and inventory all equipment.
- Bond the supplied equipment to the site ground system in accordance with Motorola's R56 standards.
- Remove existing equipment after successful system cutover and leave on site at City of Joplin location. *Upon City of Joplin's request Motorola will be please to provide a quote for the additional costs to transport decommissioned equipment to a local City of Joplin owned/leased/ maintained storage facility. Alternatively, Motorola will be please to provide a quote for the additional costs to dispose of the decommissioned equipment in an environmentally responsible manner.*

Customer Responsibilities:

- Provide access to the sites, as necessary.
- Provide secure onsite and/or local storage for equipment after staging has been completed.

Completion Criteria:

- Fixed Network Equipment installation completed and ready for optimization.

4.11.2 Fixed Network Equipment Installation Complete

- All fixed network equipment installed and accepted by City of Joplin.

4.11.3 Console Installation

Motorola Responsibilities:

- Install the console in the space provided by City of Joplin.
- Connect City of Joplin-supplied, previously-identified circuits into the console, to a demarcation point located within 25 feet of the console interface.

- Terminate the audio outputs for the logged talkgroups onto a punchblock, and then terminate these outputs into the logging recorder.
- Install a dedicated Local Area Network (LAN) at each dispatch center to connect the proposed console positions.
- Connect the appropriate equipment to City of Joplin-supplied ground system in accordance with Motorola's R56 Site Installation standards.
- Perform the console programming, based on the console templates designed during the fleetmapping process.

Customer Responsibilities:

- Provide demarcation point located within 25 feet of the console interface.

Completion Criteria:

- Console installation is complete.

4.11.4 Console Installation Complete

- Console installation completed and accepted by City of Joplin.

4.11.5 System Installation Acceptance (Milestone)

- All equipment installations are completed and accepted by City of Joplin.

4.12 SYSTEM OPTIMIZATION

4.12.1 Optimize System FNE

Motorola Responsibilities:

- Verify that all equipment is operating properly and that all electrical and signal levels are set accurately.
- Verify that all audio and data levels are at factory settings.
- Verify communication interfaces between devices for proper operation.
- Test features and functionality are in accordance with manufacturers' specifications and that they comply with the final configuration established during the CDR/system staging.
- Test and optimize the simulcast system.
- Install and integrate the RF sites with the system, then optimize and activate the SmartZone controller.
- Integrate the consoles and RF sites into the system to ensure proper operation.
- Set up the consoles on the radio system to perform the dispatching operation.

Customer Responsibilities:

- Provide access/escort to the sites.
- Provide required radio ID and alias information to enable alias database setup for interface to console.

Completion Criteria:

- System FNE optimization is complete.

4.12.2 Link Verification

Motorola Responsibilities:

- Perform test to verify site link performance, prior to the interconnection of the Motorola-supplied equipment to the link equipment.

Customer Responsibilities:

- Make available the required links which meet the specifications supplied by Motorola at the CDR.

Completion Criteria:

- Link verification successfully completed.

4.12.3 Optimization Complete

- System optimization is completed. Motorola and City of Joplin agree that the equipment is ready for acceptance testing.

4.13 AUDIT AND ACCEPTANCE TESTING

4.13.1 Perform R56 Installation Audit

Motorola Responsibilities:

- Perform R56 site-installation quality audits, verifying proper physical installation and operational configurations.
- Create site evaluation report to verify site meets or exceeds requirements, as defined in Motorola's Standards and Guidelines for Communication Sites (R56).

Customer Responsibilities:

- Provide access/escort to the sites.
- Witness tests. (if desired)

Completion Criteria:

- All R56 audits completed successfully.

4.13.2 Perform Functional Testing

Motorola Responsibilities:

- Verify the operational functionality and features of the individual subsystems and the system supplied by Motorola, as contracted.
- If any test contractually described fails, resolve the source of the failure, repeat that particular test to determine that the corrective action has been successful.
- Document the results of the acceptance tests and present to City of Joplin for review.

Customer Responsibilities:

- Witness the functional testing.

Completion Criteria:

- Successful completion of the functional testing.
- Customer approval of the functional testing.

4.14 TRAINING

4.14.1 Perform Training

Motorola Responsibilities:

- Finalize training schedules purchased as part of this project with City of Joplin Project Manager.
- Conduct the training classes outlined in the Training Plan below.

Customer Responsibilities:

- Attend training classes in the order listed below

First course in series:

Course Title	Astro 25 IV & D System Overview with L Core
Training Type	Online Self Paced
Target Audience	Radio System Administrators and Technicians
Number of Sessions	One (1)
Duration	Online Self Paced
Location	City of Joplin
Number of Attendees Quoted	Two (2)

Second course in series:

Course Title	Astro 25 IV & D Introduction to Radio System Management Applications
Training Type	Online Self Paced
Target Audience	Radio System Administrators and Technicians
Number of Sessions	One (1)
Duration	Online Self Paced
Location	City of Joplin
Number of Attendees Quoted	Two (2)

Last course in series:

Course Title	Astro 25 IV & D Radio System Administrator Workshop
Training Type	Instructor Led
Target Audience	Radio System Administrators and Technicians

Course Title	Astro 25 IV & D Radio System Administrator Workshop
Number of Sessions	One (1)
Duration	4.5 Days (36 Hours) per Session
Location	Motorola Worldwide Learning Services, Schaumburg, Illinois
Number of Attendees Quoted	Two (2)

Completion Criteria:

- All training classes completed
- Participant should be able to carry out administrative tasks in the Astro 25 IV&D system such as:
  - Provisioning subscribers and talkgroups
  - Generating historical reports
  - Controlling deployed subscribers and managing network element configurations
  - Factors of system configuration that impact Astro 25 system management

4.15 FINALIZE

4.15.1 Cutover

Motorola Responsibilities:

- Motorola and City of Joplin develop a mutually agreed upon cutover plan based upon discussions held during the CDR.
- During cutover, follow the written plan and implement the defined contingencies, as required.
- Conduct cutover meeting(s) with user group representatives to address both how to mitigate technical and communication problem impact to the users during cutover and during the general operation of the system.

Customer Responsibilities:

- Attend cutover meetings and approve the cutover plan.
- Notify the user group(s) affected by the cutover (date and time).
- Provide Motorola with the subscriber information for input into the system database, for activation.
- Ensure that all subscribers are operating on new system prior to old system being removed.

Completion Criteria:

- Successful migration from the old system to the new system.

4.15.2 Resolve Punchlist

Motorola Responsibilities:

- Work with City of Joplin to resolve punchlist items, documented during the Acceptance Testing phase, in order to meet all the criteria for final system acceptance.

Customer Responsibilities:

- Assist Motorola with resolution of identified punchlist items by providing support, such as access to the sites, equipment and system, and approval of the resolved punchlist item(s).

Completion Criteria:

- All punchlist items resolved and approved by City of Joplin.

4.15.3 Transition to Service/Project Transition Certificate

Motorola Responsibilities:

- Review the items necessary for transitioning the project to warranty support and service.
- Provide a Customer Support Plan detailing the warranty and post-warranty support, if applicable, associated with the Contract equipment.

Customer Responsibilities:

- Participate in the Transition Service/Project Transition Certificate (PTC) process.

Completion Criteria:

- All service information has been delivered and approved by City of Joplin.

4.15.4 Finalize Documentation

Motorola Responsibilities:

- Provide an electronic as-built system manual on a Compact Disc (CD). The documentation will include the following:
  - System-Level Diagram
  - Site Equipment Rack Configurations
  - Functional Acceptance Test Plan Test Sheets and Results
  - Equipment Inventory List
  - Console Programming Template

Drawings are created utilizing AutoCAD design software and will be delivered in Adobe PDF format. All other system manual documents converted from native format to Adobe PDF format to be included on the System Manual CD.

- Provide two (2) console operator manuals.

Customer Responsibilities:

- Receive and approve all documentation provided by Motorola.

Completion Criteria:

- All required documentation is provided and approved by City of Joplin.

4.15.5 Final Acceptance (Milestone)

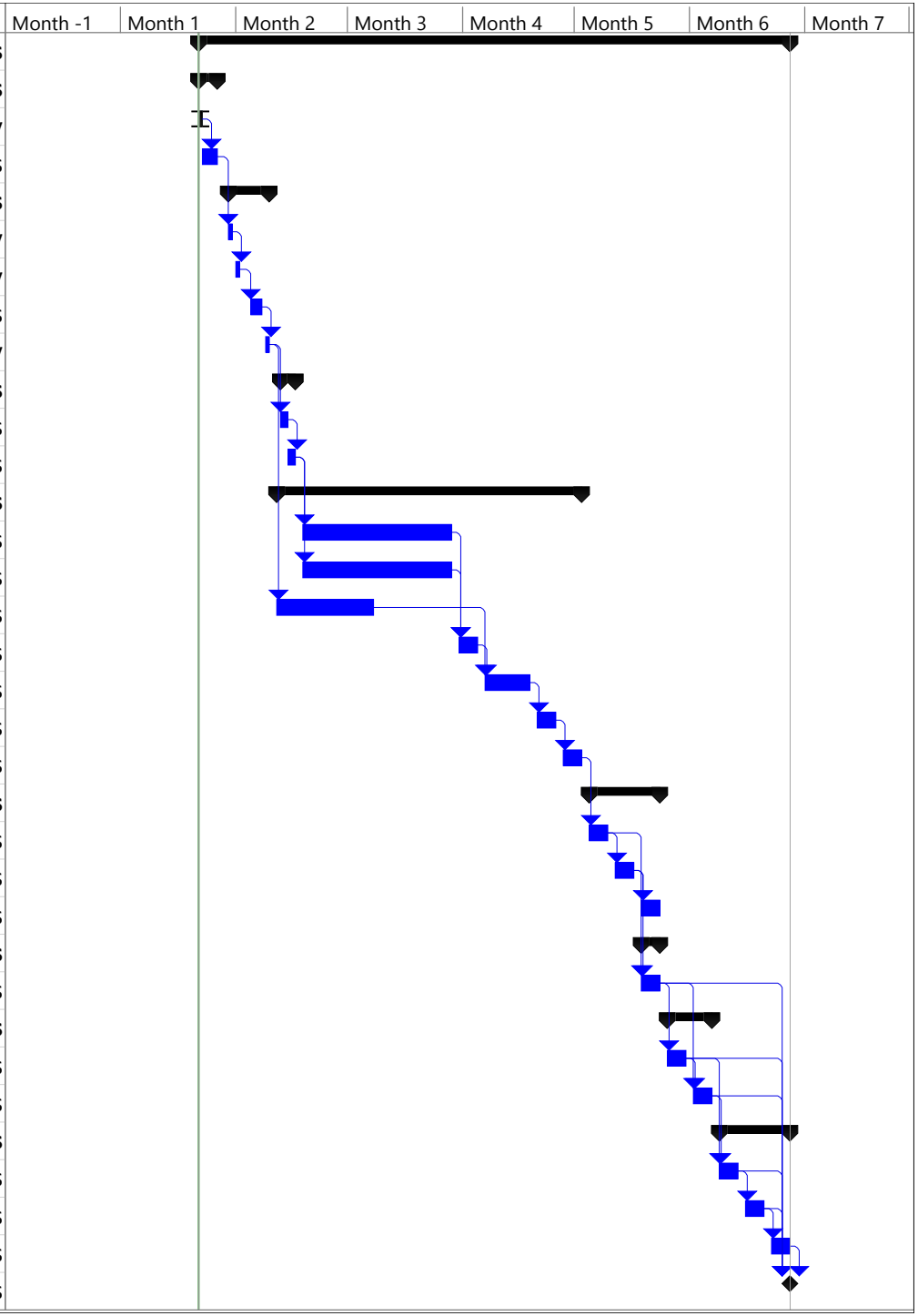
- All deliverables completed, as contractually required.
- Final System Acceptance received from City of Joplin.

SECTION 5

PROJECT SCHEDULE

Project Schedule is included on the pages that follow.

ID	Task Name	Duration
1	**City of Joplin System Upgrade**	**115 days**
2	**Contract**	**5 days**
3	City of Joplin and Motorola enter into an agreement	1 day
4	Motorola Contract Administration	4 days
5	**Design Review**	**9 days**
6	Project Kickoff with City of Joplin and Motorola Team	1 day
7	Design Review	1 day
8	Design Revisions/Updates (if Necessary)	3 days
9	Design Approval	1 day
10	**Order Fulfillment**	**4 days**
11	Equipment List(s) Processing and Trial Validation	2 days
12	Orders Bridged to Motorola Factory & Suppliers	2 days
13	**Manufacturing and Staging**	**60 days**
14	Motorola Equipment Manufacturing	30 days
15	Third Part Equipment Manufacturing	30 days
16	Develop Programming Configurations	20 days
17	Receive & Inventory Equipment at Motorola CCSi	5 days
18	Stage System	10 days
19	Perform Factory Acceptance Tests	5 days
20	Ship Equipment to Field Installer	5 days
21	**Installation, Programming and Optimization**	**15 days**
22	Install new operator positions at City of Joplin	5 days
23	Install L2 Core	5 days
24	Upgrade Site Controller and GTR Software	5 days
25	**Acceptance Testing**	**5 days**
26	Perform functional acceptance tests	5 days
27	**Cutover**	**10 days**
28	Begin dispatching using MCC 7500 Consoles	5 days
29	Remove decommissioned equipment	5 days
30	**Finalize**	**15 days**
31	Perform final inspections with City of Joplin	5 days
32	Punchlist Resolution (if Necessary)	5 days
33	Finalize as built documentation	5 days
34	Final System Acceptance	0 days



ACCEPTANCE TEST PLAN

6.1 WIDE AREA TRUNKING - FDMA ONLY SITES

6.1.1 Talkgroup Call

1. DESCRIPTION

The Talkgroup is the primary level of organization for communications on a trunked radio system. Radios with Talkgroup call capability will be able to communicate with other members of the same Talkgroup. This provides the effect of a private channel down to the Talkgroup level.
This test will demonstrate that a Talkgroup transmission initiated by a radio user will only be heard by system users, which have, the same Talkgroup selected. As with other types of calls, Talkgroup calls can take place from anywhere in the system.

SETUP

RADIO-1 - SITE 1 - TALKGROUP 1
RADIO-2 - SITE 2 - TALKGROUP 1
RADIO-3 - SITE 1 - TALKGROUP 2
RADIO-4 - SITE 2 - TALKGROUP 2

VERSION #1.040

2. TEST

Step 1. Initiate a Wide Area Call with RADIO-1 in TALKGROUP 1.

Step 2. Observe that only RADIO-2 will be able to monitor and respond to the call.

Step 3. Initiate a Wide Area Call with RADIO-3 in TALKGROUP 2.

Step 4. Observe that only RADIO-4 will be able to monitor and respond the call.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.2 Secure Operation

1. DESCRIPTION

Digital encryption is used to scramble a transmission so only properly equipped and configured radios can monitor the conversation. A "Key" is used to encrypt the transmit audio. Only radios with the same "Key" can decrypt the audio and listen to it.

SETUP

RADIO-1 - TALKGROUP 1 (SECURE TX MODE)
RADIO-2 - TALKGROUP 1 (SECURE TX MODE)
RADIO-3 - TALKGROUP 1 (SECURE MODE and no, or incorrect key)
RADIO-4 - TALKGROUP 1 (Clear TX Mode)

Note: The identical secure mode must be programmed into RADIO-1, RADIO-2, RADIO-4 and that RADIO-3 has no secure code loaded or has a unique secure code from the other testing radios.

VERSION #1.020

2. TEST

Step 1. Initiate a secure wide area call with RADIO-1 on TALKGROUP 1. Keep this call in progress until instructed to end the call.

Step 2. Observe that RADIO-2 will be able to monitor the call.

Step 3. Observe that RADIO-3 does not receive the call.

Step 4. Observe that RADIO-4 will also receive the call even with the secure switch set to the non-secure mode of operation.

Step 5. End the call from RADIO-1.

Step 6. Respond with RADIO-2 and verify that RADIO-1 receives the response audio but RADIO-3 cannot.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.3 Continuous Assignment Updating

1. DESCRIPTION

When a talkgroup is assigned a voice channel, the site controller continues to transmit the channel assignment on the control channel for the duration of the talkgroup call. Radios coming into use on the system are automatically sent to voice channels with conversations in progress involving their selected talkgroups.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
RADIO-3 - TALKGROUP 1

VERSION #1.010

2. TEST

Step 1. Turn OFF RADIO-1.

Step 2. Initiate a Talkgroup Call using RADIO-2 and verify RADIO-3 hears the audio.

Step 3. While the Talkgroup Call is in progress, turn ON RADIO-1.

Step 4. Observe RADIO-1, which was just brought back into service, joins the Talkgroup Call already in progress.

Step 5. End the talkgroup call.

Step 6. Switch RADIO-1 to another talkgroup.

Step 7. Initiate a Talkgroup Call from RADIO-2 to RADIO-3.

Step 8. While the Talkgroup Call is in progress, set RADIO-1 back to TALKGROUP 1.

Step 9. Observe that RADIO-1 joins the Talkgroup Call already in progress.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.4 Call Alert

1. DESCRIPTION

Call Alert is a tone page that allows a user to selectively alert another radio unit. The initiating radio will receive notification from the trunked system as to whether or not the page was received by the target radio. Units receiving a Call Alert will sound an alert tone. As with other types of calls, Call Alerts can take place from anywhere in the system.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
RADIO-3 - TALKGROUP 3

VERSION #1.010

2. TEST

Step 1. Using RADIO-1, press the page button.

Step 2. Enter the unit ID of RADIO-2 with the keypad, or scroll to the location where this ID is stored

Step 3. Press the PTT to initiate the call alert. Verify that the RADIO-1 user receives audible indication that the Call Alert was sent.

Step 4. Verify that RADIO-2 user receives an audible indication of an incoming Call Alert was sent but RADIO-3 does not.

Step 5. Verify RADIO-1 gets an audible indication that the Call Alert was successfully received at the target radio.

Step 6. Turn off RADIO-2. Send a Call Alert from RADIO-1 to RADIO-2.

Step 7. Verify that the RADIO-1 user receives audible indication that the Call Alert was sent.

Step 8. Verify RADIO-1 receives a "No Acknowledgement" indication that the Call Alert was not received at the target radio.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.5 Private Call

1. DESCRIPTION

Private Call is a selective calling feature that allows a radio user to carry on one-to-one conversation that is only heard by the 2 parties involved. Subscriber units receiving a private call will sound an alert tone. As with other types of calls, Private Calls can take place from anywhere in the system.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
RADIO-3 - TALKGROUP 1

VERSION #1.020

2. TEST

Step 1. Using RADIO-1, press the Private Call (Call) button.

Step 2. Enter the unit ID of RADIO-2 with the keypad, or scroll to the location where this ID is stored.

Step 3. Press the PTT to initiate the Private Call.

Step 4. Verify that RADIO-2 hears tones and the display indicates that a Private Call has been received, but RADIO-3 receives no indications.

Step 5. Answer the call at RADIO-2 by pressing the Private Call (Call)/Respond button. If RADIO-2 has a display, verify it shows the ID number or Alias of the calling unit.

Step 6. Press the PTT switch on RADIO-2 and respond to the Private Call. Note that if you do not press the Private Call button before pressing PTT, your audio will be heard by all members of the talkgroup, and not just by the radio initiating the Private Call.

Step 7. Verify that RADIO-2 can communicate with RADIO-1.

Step 8. Verify that RADIO-3 does not monitor the Private Call.

Step 9. End the Private Call by pressing the "home" key and return to normal talkgroup operation.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.6 Busy Queuing and Callback with Ten Talkgroup Priority Levels

1. DESCRIPTION

If no voice channel resources are available, radios requesting channels for new conversations are placed in a queue. Users of the same priority will move through the queue in a FIFO (first in, first out) sequence; however, users of higher priority will be inserted ahead of lower priority users in queue. When a voice channel becomes available, the radio at the top of the busy queue gets a channel assignment and generates a callback tone. The callback tone alerts the user that a channel assignment was made and transmitting is now possible on the selected talkgroup. An Emergency Call has the highest priority at level 1. The highest assignable priority is 2 and 10 is the lowest.

NOTE: All radios and talkgroups should start with default priorities. Default is 10.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 6
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 3
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 6
RADIO-4 - SITE - Any Site

VERSION #1.020

2. TEST

Step 1. Simulate a busy system by disabling all channels at SITE 1 with the exception of the control channel and one voice channel.

Step 2. Verify the priority level for TALKGROUP 6's template as priority 9.

Step 3. Initiate a Talkgroup Call with RADIO-1. Keep this call in progress until instructed to end the call.

Step 4. Key RADIO-3 and observe that the radio receives a busy.

Step 5. Key RADIO-2 and observe that the radio receives a busy.

Step 6. End the Talkgroup Call established in Step 3.

Step 7. Observe RADIO-2 receives the first callback and can now make a call to RADIO-4 upon receipt of the callback indication.

Step 8. End the call between RADIO-2 and RADIO-4.

Step 9. Observe RADIO-3 now receives a callback and can make a call upon receipt of the callback indication.

Step 10. Return all the channels in the system to service.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.7 Emergency Alarm and Call with Ruthless Preemption

1. DESCRIPTION

Users in life threatening situations can use the Emergency button on the radio to immediately send a signal to the dispatcher and be assigned the next available voice channel. An Emergency Call can be set to either Top of Queue or Ruthless Preemption operation. To demonstrate this, an Emergency Alarm and Call will be initiated from a subscriber which will be received by a subscriber, on the same talkgroup, affiliated at any site of any zone in the system.

NOTE : If the subscriber does not have the Display option, the Emergency ID will not be displayed. This test is not recommended for single site systems as RF contention will occur.

SETUP

RADIO-1 - TALKGROUP 5
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 5
RADIO-2 - SITE - SITE 2
RADIO-3 - TALKGROUP 2
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 2
RADIO-4 - SITE - SITE 2
CONSOLE-1 - TALKGROUP 5

VERSION #1.030

2. TEST

Step 1. Verify the emergency type for TALKGROUP 5's template is configured for Ruthless Preemption.

Step 2. Simulate a busy system by disabling all channels at SITE 1 with the exception of the control channel and one voice channel.

Step 3. Press the PTT on RADIO-4 to initiate a call on TALKGROUP 2 and hold the PTT switch until instructed to release. Verify RADIO-3 receives the call.

Step 4. Key RADIO-1 and verify the radio receives a busy tone. Release the PTT switch on RADIO-1.

Step 5. Using RADIO-1 send an Emergency Call by pressing the emergency switch and then the PTT switch.

Step 6. Observe that RADIO-1 is granted the channel immediately and the Talkgroup Call is dropped for RADIO-3. Verify an Emergency Alarm is displayed at CONSOLE-1 on TALKGROUP 5. Dekey RADIO-4.

Step 7. Key RADIO-3 and verify the radio receives a busy tone. Release the PTT switch on RADIO-3.

Step 8. End the Emergency Call by holding down the Emergency button on RADIO-1 until an alert tone sounds. Verify RADIO-1 returns to normal operation and that RADIO-3 receives a callback after the emergency hang time expires.

Step 9. Enable the disabled channels at SITE 1 to return the system to normal operation.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.8 Emergency Alarm and Call with Top of Queue

1. DESCRIPTION

Users in life threatening situations can use the Emergency button on the radio to immediately send a signal to the dispatcher and be assigned the next available voice channel. An Emergency Call can be set to either Top of Queue or Ruthless Preemption operation. During an emergency call the Emergency ID will appear on the display of the subscribers. To demonstrate this, an Emergency Alarm and Call will be initiated from a subscriber which will be received by a subscriber on the same talkgroup, affiliated at any site of any zone in the system.

NOTE: If the subscriber does not have the Display option, the Emergency ID will not be displayed.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - Any Site
RADIO-3 - TALKGROUP 2
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 3
RADIO-4 - SITE - SITE 1

All radios and talkgroups should start with default priorities. Default is 10.

VERSION #1.010

2. TEST

Step 1. Verify the emergency type for TALKGROUP 1's template is set up as Top of Queue.

Step 2. Simulate a busy system by disabling all channels at SITE 1 with the exception of the control channel and one voice channel.

Step 3. Press the PTT to initiate a call with RADIO-3 and hold the PTT switch until instructed to release.

Step 4. Key RADIO-4 and verify the radio receives a busy tone. Release the PTT switch on RADIO-4.

Step 5. Using RADIO-1 send an Emergency Call by depressing the emergency switch and then the PTT switch.

Step 6. Observe that RADIO-1 cannot transmit due to the voice channel being busy.

Step 7. Release the PTT switch on RADIO-3.

Step 8. Observe that RADIO-1 receives the call back before RADIO-4 and is able to proceed with the call. Also observe that the display on RADIO-2 denotes an emergency and the unit ID or alias of RADIO-1.

Step 9. Dekey RADIO-1 and end the Emergency Call by holding down the Emergency button on RADIO-1 until an alert tone sounds. Verify RADIO-1 returns to normal operation and that RADIO-4 receives a callback.

Step 10. Return the system to normal operation by enabling all the channels at SITE 1.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.9 Emergency Alarm and Call with Talkgroup Revert

1. DESCRIPTION

Users in life threatening situations can use the Emergency button on the radio to immediately send a signal to the dispatcher and be assigned the next available voice channel. An Emergency Call can be set to either Top of Queue or Ruthless Preemption operation. During an emergency call the Emergency ID will appear on the display of the subscribers. To demonstrate this, an Emergency Alarm and Call will be initiated from a subscriber which will be received by a subscriber affiliated at any site of any zone in the system.
This test will demonstrate a subscriber has the ability to revert to a specific talkgroup when an emergency is initiated. This is useful when the users have a designated talkgroup for handling emergencies. The revert talkgroup must be set in the subscriber via software.

NOTE: If the subscriber does not have the Display option, the Emergency ID will not be displayed.

SETUP

RADIO-1 - TALKGROUP 4
RADIO-2 - TALKGROUP 4
RADIO-3 - EMERGENCY TG

* EMERGENCY TG is the talkgroup programmed for emergency reverts.

VERSION #1.020

2. TEST

Step 1. Initiate a call on TALKGROUP 4 from RADIO-1 and verify RADIO-2 can hear the audio. Verify RADIO-3 does not hear the audio.

Step 2. Dekey RADIO-1.

Step 3. Using RADIO-1, send an Emergency Call by depressing the emergency switch and then the PTT switch.

Step 4. Observe the display on RADIO-3 denotes an emergency and the unit ID or alias of the unit sending the emergency and that RADIO-3 can hear RADIO-1's audio.

Step 5. In addition observe that RADIO-2 cannot hear RADIO-1's audio.

Step 6. Release the PTT switch on RADIO-1 and end the Emergency Call by holding down the Emergency button.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.10 Priority Monitor/Priority Scan

1. DESCRIPTION

A subscriber unit can scan a pre-programmed list (in the radio) to find any Priority and Non-priority Talkgroups with assigned voice channels at that site. To demonstrate this, a call will be initiated from a portable at a remote site on a talkgroup monitored by a portable at the same site as the scanning radio. The scanning radio will scan from its selected talkgroup to the active talkgroup. The test will be repeated with an additional radio transmitting on the Priority Talkgroup while the scanning radio is scanning. This third radio will be on a remote site with a fourth radio on the Priority Talkgroup at the same site as the scanning radio.

SETUP

RADIO-1 - TALKGROUP 1 (SCANNING)
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 1
RADIO-3 - SITE - SITE 2
RADIO-4 - TALKGROUP 2
RADIO-4 - SITE - SITE 2
RADIO-5 - TALKGROUP 2
RADIO-5 - SITE - SITE 1

VERSION #1.010

2. TEST

Step 1. Verify that RADIO-1 is set to TALKGROUP 1 and in the scan mode of operation and programmed to scan TALKGROUP 1 and TALKGROUP 2 with TALKGROUP 1 as its Priority Monitor Talkgroup.

Step 2. Verify Priority Monitor and the Valid Site setting is set to yes for SITE 2.

Step 3. Initiate a Talkgroup Call with RADIO-4 to RADIO-5 and observe that RADIO-1 scans to the talkgroup and receives the call. Keep the call in progress until the completion of the following step.

Step 4. Initiate a Talkgroup Call with RADIO-3 and observe that RADIO-1 reverts to the TALKGROUP 1 and receives the call.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.11 Site Trunking Indication

1. DESCRIPTION

When a remote site loses its link or does not have a link to the Zone Controller, the affected site will enter "Site Trunking" mode of operation. Radios locked onto this site will be serviced locally within this site's coverage area.

NOTE: If the subscriber does not have the Display option, the "Site Trunking" indication will not be displayed.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 2
RADIO-2 - SITE - SITE 1
Lock the subscribers to SITE 1 if more than one site exists on the system.

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Verify that RADIO-1 and RADIO-2 are displaying the "Site Trunking" indication.

Step 3. Return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.12 Talkgroup Call

1. DESCRIPTION

When a site goes into Site Trunking, radios with Talkgroup Call capability will be able to communicate with other members of the same talkgroup at that same site. Members of the same talkgroup at other sites will not be able to monitor those conversations.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 1
RADIO-3 - SITE - SITE 2
RADIO-4 - TALKGROUP 1
RADIO-4 - SITE - SITE 2

Note: All Radios should be "Site Locked"

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Initiate a Talkgroup Call with RADIO-1 on TALKGROUP 1 at SITE 1.

Step 3. Observe that only RADIO-2 will be able to monitor and respond to the call. Note that RADIO-3 and RADIO-4 are not able this monitor the call since the site is not in wide area operation.

Step 4. Initiate a Talkgroup Call with RADIO-3 on TALKGROUP 1 at SITE 2.

Step 5. Observe that only RADIO-4 will be able to monitor and respond to the call.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.13 Call Alert

1. DESCRIPTION

Call Alert is a tone page that allows a user to selectively alert another radio unit. When a site is in Site Trunking, Radios at the site will only be able to Call Alert other radios at the same site. The initiating radio will receive notification from the trunked system as to whether or not the page was received by the target radio.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 2
RADIO-2 - SITE - SITE 1

Note: All Radios should be "Site Locked"

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Using RADIO-1, press the page button.

Step 3. Enter the Unit ID of RADIO-2 with the keypad, or scroll to the location where this ID is stored.

Step 4. Press the PTT to initiate the Call Alert.

Step 5. Verify that RADIO-2 received the Call Alert.

Step 6. Exit the Call Alert mode and return to normal talkgroup mode.

Step 7. Return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.14 Private Call

1. DESCRIPTION

Private Call is a selective calling feature that allows a dispatcher or radio user to carry on one-to-one conversation that is only heard by the 2 parties involved. When a site is in Site Trunking, Radios at the site will only be able to Private Call other radios at the same site.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 1
RADIO-3 - SITE - SITE 1

Note: All Radios should be "Site Locked"

VERSION #1.020

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Using RADIO-1, press the Private Call button.

Step 3. Enter the Unit ID of RADIO-2 with the keypad, or scroll to the location where this ID is stored.

Step 4. Press the PTT to initiate the call.

Step 5. Verify that at RADIO-2 only tones are heard and the display indicates that a call has been received.

Step 6. Answer the call at RADIO-2 by pressing the Private Call/Respond button. Verify its display shows the ID number or alias of the calling unit.

Step 7. Press the PTT switch on RADIO-2 and respond to the call. Note that if you do not press the Private Call button before pressing PTT, your audio will be heard by all members of the talkgroup, and not by the radio initiating the Private Call.

Step 8. Verify only RADIO-1 hears the audio from RADIO-2.

Step 9. End the Private Call. Return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

6.1.15 Site Trunking Roaming to Wide Area Sites

1. DESCRIPTION

Radios at a site that goes into Site Trunking will attempt to roam to a site in Wide Area Trunking so it is not stranded at a site with limited system resources available. The parameter used by the subcribers to to set a random timer which delays subscribers from flooding an adjacent site with registration requests is the Failure Random Holdoff Time (FRHOT). This is the maximum time the radio may wait before attempting to location register to a new site if the radio switches sites because of a site failure.
NOTE: This feature only works on a multi-site system.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1

Note: All sites should be in Wide Area at the start of this test. All radios should NOT be "Site Locked". The subscribers should not be configured for "Always Preferred" for this site which would prevent the radios from roaming under site trunking conditions.

VERSION #1.010

2. TEST

Step 1. Set the Failure Random Holdoff Time (FRHOT) setting for SITE 1 to 1 minute. (This can be found in the Unified Network Configurator Wizard.)

Step 2. Initiate a Talkgroup Call between RADIO-1 and RADIO-2.

Step 3. Note the site that the radios are affiliated to.

Step 4. Place the site the radios are affiliated to into Site Trunking.

Step 5. Once RADIO-1 and RADIO-2 have roamed to a wide area site, initiate a Talkgroup Call between RADIO-1 and RADIO-2.

Step 6. Return the FRHOT timer to the original setting.

Step 7. Return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.16 Busy Queuing and Callback

1. DESCRIPTION

If no voice channel resources are available, radios requesting channels for new conversations are placed in the busy queue. Users of the same priority will move through the queue in a FIFO (first in, first out) sequence. When a voice channel becomes available, the radio at the top of the busy queue gets a channel assignment and generates a callback tone. The callback alerts the user that a channel assignment was made and transmitting is now possible on the selected talkgroup.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 2
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 3
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 1
RADIO-4 - SITE - SITE 1

Note: All radios are "Site Locked."

VERSION #1.030

2. TEST

Step 1. Simulate a busy system by disabling all channels at SITE 1 with the exception of the control channel and one voice channel.

Step 2. Initiate a Talkgroup Call with RADIO-1 and observe that RADIO-4 receives the call. Keep this call in progress until instructed to end the call.

Step 3. Key RADIO-2 and observe that the radio receives a busy.

Step 4. Key RADIO-3 and observe that the radio receives a busy.

Step 5. End the Talkgroup Call established in Step 2.

Step 6. Observe that RADIO-2 receives a callback prior to RADIO-3 receiving a callback.

Step 7. Return the site to Wide Area Trunking unless the next test requires Site Trunking

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.17 Emergency Call and Alarm

1. DESCRIPTION

Emergency Alarms and Calls can be initiated by subscribers when the registered site is in Site Trunking. With all subscribers registered on a Site Trunking site, a subscriber will initiate an Emergency Alarm by pressing the Emergency button. By pressing the PTT, an Emergency Call will be issued and the ID of the initiator will be displayed with an Emergency indication by the other subscribers on the same talkgroup.

Note that for site trunking, Emergency Call operation is always Top of Queue.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 2
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 3
RADIO-4 - SITE - SITE 1

Note: All Radios should be "Site Locked"

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Simulate a busy system by disabling all channels at SITE 1 with the exception of the control channel and one voice channel.

Step 3. Press the PTT on RADIO-3 and hold the PTT switch until instructed to release.

Step 4. Key RADIO-4 and observe that the radio receives a busy.

Step 5. Using RADIO-1, initiate an emergency alarm followed by an emergency call.

Step 6. Observe that RADIO-1 cannot transmit due to the voice channel being busy.

Step 7. Release the PTT switch on RADIO-3.

Step 8. Observe that RADIO-1 can now proceed with the call and RADIO-2 receives the call. Also observe that the display on RADIO-2 denotes an emergency and the ID or Alias of the unit sending the emergency.

Step 9. End the emergency call and verify that RADIO-4 gets a callback.

Step 10. Restore all channels to service and return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

6.1.18 Wide Area Recovery

1. DESCRIPTION

A site in Site Trunking will transition to Wide Area Trunking when all failures have been cleared. All subscribers should transition from Site Trunking to Wide Area Trunking and continue to process calls.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 1
RADIO-3 - SITE - SITE 2
RADIO-4 - TALKGROUP 1
RADIO-4 - SITE - SITE 2
CONSOLE-1 - TALKGROUP 1

Note: All Radios should be "Site Locked"

VERSION #1.020

2. TEST

Step 1. Set the status of SITE 1 to Wide Area and clear any system errors that may have placed SITE 1 into Site Trunking.

Step 2. Verify that the status of SITE 1 has transitioned into Wide Area Trunking.

Step 3. Verify that RADIO-1 and RADIO-2 no longer display Site Trunking.

Step 4. Verify Wide Area communications between RADIO-1, RADIO-2, RADIO-3, RADIO-4 and CONSOLE-1.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.19 Talkgroup Selection and Call

1. DESCRIPTION

The Talkgroup Call is the primary level of organization for communications on a trunked radio system. Dispatchers with Talkgroup Call capability will be able to communicate with other members of the same talkgroup. This provides the effect of an assigned channel down to the talkgroup level. When a Talkgroup Call is initiated from a subscriber unit, the call is indicated on each dispatch operator position that has a channel control resource associated with the unit's channel/talkgroup.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
RADIO-3 - TALKGROUP 1
RADIO-4 - TALKGROUP 2
CONSOLE-1 - TALKGROUP 1
CONSOLE-2 - TALKGROUP 2

VERSION #1.010

2. TEST

Step 1. Initiate a wide area call from CONSOLE-1 on TALKGROUP 1.

Step 2. Observe that RADIO-1 and RADIO-3 will be able to monitor the call. Dekey the console and have either radio respond to the call.

Step 3. Observe that all consoles with TALKGROUP 1 can monitor both sides of the conversation.

Step 4. Initiate a wide area call from CONSOLE-2 on TALKGROUP 2.

Step 5. Observe that RADIO-2 and RADIO-4 will be able to monitor the call. Dekey the console and have either radio respond to the call.

Step 6. Observe that all consoles with TALKGROUP 2 can monitor both sides of the conversation.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.20 Instant Transmit

1. DESCRIPTION

The instant transmit switch provides immediate operator access to a channel, independent of its select status (selected or unselected). It provides priority over other dispatcher transmit bars or optional footswitches.

SETUP

RADIO-1 - TALKGROUP 1
CONSOLE-1 – TALKGROUP 1 (Selected), TALKGROUP 2 (Unselect mode)

VERSION #1.010

2. TEST

Step 1. Using CONSOLE-1, press the Instant Transmit button on TALKGROUP 1.

Step 2. Verify that the Transmit indicator is lit.

Step 3. Verify RADIO-1 can monitor and respond to the call on TALKGROUP 1.

Step 4. On RADIO-1 change to TALKGROUP 2.

Step 5. Using CONSOLE-1, press the Instant Transmit button on the TALKGROUP 2 radio resource.

Step 6. Verify RADIO-1 can monitor and respond to the call on TALKGROUP 2.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.21 Talkgroup Selection and Call - Secure

1. DESCRIPTION

The Talkgroup Call is the primary level of organization for communications on a trunked radio system. Dispatchers with Talkgroup Call capability will be able to communicate with other members of the same talkgroup. This provides the effect of an assigned channel down to the talkgroup level. When a Talkgroup Call is initiated from a subscriber unit, the call is indicated on each dispatch operator position that has a channel control resource associated with the unit's channel/talkgroup. Digital encryption is used so only properly equipped and configured subscribers can monitor the conversation. A "Key" is used to encrypt the transmit audio. Only radios and Consoles with the same "Key" can decrypt the audio and listen to it.

SETUP

RADIO-1 - TALKGROUP 1 (Secure TX Mode)
RADIO-2 - TALKGROUP 2 (Secure TX Mode)
RADIO-3 - TALKGROUP 2 (No Keys)
RADIO-4 - TALKGROUP 1 (Clear TX Mode with Keys loaded)
CONSOLE-1 - TALKGROUP 1 and TALKGROUP 2 (Secure TX Mode)

VERSION #1.040

2. TEST

Step 1. Initiate a wide area secure call from CONSOLE-1 on TALKGROUP 1.

Step 2. Verify RADIO-1 can monitor and respond to the secure call.

Step 3. Verify RADIO-4 can monitor and respond to the secure call because even though it is in clear mode the correct encryption keys are loaded for the secure call.

Step 4. Initiate a wide area secure call from CONSOLE-1 on TALKGROUP 2.

Step 5. Verify that RADIO-2 can monitor and respond to the secure call. Note that RADIO-3 cannot monitor the call.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.22 PTT Unit ID/Alias Display

1. DESCRIPTION

Console operator positions contain various resources such as talkgroup, multigroup, Private Call which enables the dispatcher to communicate with the subscriber units. If activity occurs on one of these operator position resources, the unit ID or associated alias of the initiating radio appears at the console resource.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1
CONSOLE-2 - TALKGROUP 1

VERSION #1.010

2. TEST

Step 1. Select the resource for TALKGROUP 1 on CONSOLE-1.

Step 2. Initiate a call on TALKGROUP 1 from RADIO-2 and observe that the alias is seen at CONSOLE-1 in the resource window as well as in the Activity Log window.

Step 3. Initiate a call from RADIO-1 and observe that the alias of RADIO-1 is seen at CONSOLE-1 in the resource window as well as in the Activity Log window.

Step 4. Modify RADIO-2's alias. Make sure to give enough time for the alias change to propagate to the Zone Controller.

Step 5. Initiate a call from RADIO-2 and observe the new alias of RADIO-2 is seen at CONSOLE-1 in the list in the resource window as well as in the Activity Log window.

Step 6. Return RADIO-2's alias to its original state.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.23 Emergency Alarm and Call Display Description

1. DESCRIPTION

Users in life threatening situations can use the emergency button on the radio to send an audible alarm and a visual alarm signal to a console operator in order to request immediate system access to a voice channel for an emergency call. An emergency alarm begins after the radio user presses the radio's emergency button. Pressing the emergency button places the radio in "emergency mode". To begin an emergency call, the radio user must press the radio's PTT button while in "emergency mode." The assigned voice channel will be dedicated to the emergency caller's talkgroup for an extended period of time, equal to the Message Hang Time plus the Emergency Hang Time. As with other call types, emergency calls can operate across sites as well as within the same site.

SETUP

RADIO-1 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1
CONSOLE-2 - TALKGROUP 1

VERSION #1.010

2. TEST

Step 1. Initiate an Emergency Alarm from RADIO-1.

Step 2. Observe the Emergency from RADIO-1 is received at CONSOLE-1 for TALKGROUP 1.

Step 3. Acknowledge the Emergency at the operator position. Verify CONSOLE-2 receives notification that the call has been acknowledged.

Step 4. Initiate a call with RADIO-1 to initiate an Emergency call.

Step 5. Observe CONSOLE-1 and CONSOLE-2 can monitor RADIO-1

Step 6. Clear the Emergency from CONSOLE-1 on TALKGROUP 1.

Step 7. End the Emergency Alarm from RADIO-1.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.24 Multigroup Call

1. DESCRIPTION

This trunking feature allows an equipped console operator position to transmit an announcement to several different talkgroups simultaneously. As with Talkgroup Calls, multigroup calls operate across sites as well as within the same site.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
RADIO-3 - RANDOM
CONSOLE-1 - ATG 1

Note: TALKGROUP 1 and TALKGROUP 2 are members of ATG 1. RANDOM is any talkgroup not a member of ATG 1.

VERSION #1.010

2. TEST

Step 1. Using CONSOLE-1, select the ATG 1 resource.

Step 2. Initiate the Multigroup Call from CONSOLE-1.

Step 3. Observe that RADIO-1 and RADIO-2 receive the Multigroup Call.

Step 4. Verify that RADIO-3 does not receive the Multigroup Call because it is not a member of ATG 1.

Step 5. Answer the Multigroup Call using RADIO-1 and observe CONSOLE-1 receives the response.

Step 6. Verify that if the call is answered within the repeater hang time, the console will receive the call on the ATG 1 resource tile, otherwise the console will receive the call on the TALKGROUP 1 tile.

Step 7. Verify that if the call is answered within the repeater hang time, RADIO-2 will monitor the call.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.25 Multi-Select Operation

1. DESCRIPTION

Multi-Select (Msel) allows the console operator to group a number of channels/talkgroups together such that when the general transmit bar is depressed, all of the multi-selected channels/talkgroups will transmit at the same time with the same information. Multi-Select is one way communication call. If a radio user responds to a Multi-Select call the talkgroup the user is affiliated to will be the only one to hear the call. There is no super-group formed, so radio communication is still at the single talkgroup level. Multi-Select is utilized to send an APB to several channels/talkgroups. A Multi-Select has a limit of twenty (20) trunking/conventional resources

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
CONSOLE-1 - TALKGROUP 1, TALKGROUP 2

VERSION #1.010

2. TEST

Step 1. From CONSOLE-1, create an Msel group with TALKGROUP 1 and TALKGROUP 2.

Step 2. Transmit on the Msel using the Msel instant transmit button.

Step 3. Verify that RADIO-1 and RADIO-2 hear the call.

Step 4. Initiate a call with RADIO-1.

Step 5. Verify the call is heard on CONSOLE-1 but not on RADIO-2.

Step 6. Initiate a call with RADIO-2.

Step 7. Verify the call is heard on CONSOLE-1 but not on RADIO-1.

Step 8. On CONSOLE-1 dissolve the Msel.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.26 Talkgroup Patch

1. DESCRIPTION

Talkgroup Patch allows a dispatcher to merge several talkgroups together on one voice channel to participate in a single conversation. This can be used for situations involving two or more talkgroups that need to communicate with each other.
Using the Patch feature, the console operator can talk and listen to all of the selected talkgroups grouped; in addition, the members of the individual talkgroups can also talk or listen to members of other talkgroups. Patched talkgroups can communicate with the console dispatcher and other members of different talkgroups because of the "supergroup" nature of the Patch feature.

NOTE : If "secure" and "clear" resources are patched together, one repeater for each mode may be assigned per site.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
RADIO-3 - TALKGROUP 1
RADIO-4 - TALKGROUP 2
CONSOLE-1 - TALKGROUP 1 and TALKGROUP 2

Note: All 4 Radios must have the same home zone.

VERSION #1.010

2. TEST

Step 1. Using CONSOLE-1 create a patch between TALKGROUP 1 and TALKGROUP 2.

Step 2. Initiate a patch call from CONSOLE-1.

Step 3. Verify RADIO-1, RADIO-2, RADIO-3, and RADIO-4 can monitor the call.

Step 4. Initiate several calls between the radios and verify successful communication.

Step 5. Dissolve the patch created in step 1.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.27 Talkgroup Patch - Secure

1. DESCRIPTION

Talkgroup Patch allows a dispatcher to merge several talkgroups together on one voice channel to participate in a single conversation. This can be used for situations involving two or more talkgroups that need to communicate with each other. Using the Patch feature, the console operator can talk and listen to all of the selected talkgroups grouped; in addition, the members of the individual talkgroups can also talk or listen to members of other talkgroups. Patched talkgroups can communicate with the console dispatcher and other members of different talkgroups because of the "supergroup" nature of the Patch feature.

SETUP

RADIO-1 - TALKGROUP 1 (Secure TX Mode)
RADIO-2 - TALKGROUP 2 (Secure TX Mode)
RADIO-3 - TALKGROUP 1 (No secure keys loaded)
RADIO-4 - TALKGROUP 2 (Clear TX Mode with keys loaded)
CONSOLE-1 - TALKGROUP 1 and TALKGROUP 2 (Secure TX Mode)

Note: All 4 Radios must have the same home zone.

VERSION #1.010

2. TEST

Step 1. Using CONSOLE-1 create a secure patch between TALKGROUP 1 and TALKGROUP 2.

Step 2. Initiate a patch call from CONSOLE-1.

Step 3. Verify RADIO-1, RADIO-2 and RADIO-4 can monitor the call.

Step 4. Initiate a talkgroup call on TALKGROUP 1 from RADIO-1.

Step 5. Observe that all radios are able to hear RADIO-1 except RADIO-3.

Step 6. Dissolve the patch.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.28 Alert Tones - Talkgroup

1. DESCRIPTION

Pre-defined alert tones can be transmitted on the selected Radio Resource to subscribers which can alert members of a channel / talkgroup to a particular event or signify to radio users special instructions are to follow. The Console has the ability to send an Alert-Tone signal on selected conventional or talkgroup resources.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1

VERSION #1.040

2. TEST

Step 1. Select TALKGROUP 1 on CONSOLE-1.

Step 2. Select Alert Tone 1 and depress the Alert Tone button.

Step 3. Verify that RADIO-1 and RADIO-2 hear Alert Tone 1.

Step 4. Repeat Steps 2-3 for Alert Tone 2 and 3.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.29 Call Alert

1. DESCRIPTION

Call Alert Page allows a subscriber/dispatcher to selectively alert another radio unit. The initiating subscriber/console will receive notification as to whether or not the call alert was received. Units receiving a Call Alert will sound an alert tone and show a visual alert indication. The display will also show the individual ID of the initiating subscriber/console unit.

SETUP

RADIO-1 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1

VERSION #1.030

2. TEST

Step 1. Using CONSOLE-1, select the call alert button in the "Private Call" resource window.

Step 2. Enter the ID of RADIO-1 and send the call alert to RADIO-1.

Step 3. Verify that RADIO-1 receives the alert and that the ID or alias of the console is shown.

Step 4. Turn off RADIO-1.

Step 5. Using CONSOLE-1, send the call alert to RADIO-1 again.

Step 6. Verify that after trying to page RADIO-1, the console displays "Can not send call alert - target not found" in the summary/status list.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.30 Console Initiated Private Call to Subscriber

1. DESCRIPTION

Private Conversation is a selective calling feature which allows a dispatcher or radio user to carry on one-to-one conversation that is heard only by the two parties involved. Subscriber units receiving a private call will sound an alert tone. As with other call types, Private Calls operate across sites as well as within the same site.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1

VERSION #1.020

2. TEST

Step 1. Using CONSOLE-1, select the "PRIVATE-CALL" tile and click the Private Call function.

Step 2. Select the unit to be Private Called, in this case RADIO-1. (or select the numeric keypad and enter the Unit ID to be Private Called.)

Step 3. Click the Send button.

Step 4. Answer the Private Call with RADIO-1 and respond to the console.

Step 5. Verify RADIO-2 does not hear the private conversation.

Step 6. After completing the Private Call, return to the normal talkgroup mode.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.31 Console Initiated Secure Private Call to Subscriber

1. DESCRIPTION

Private Conversation is a selective calling feature that allows a dispatcher or radio user to carry on one-to-one conversation that is heard only by the two parties involved. The test will demonstrate the ability to initiate/receive secure private calls by the Console/Radio.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1

VERSION #1.030

2. TEST

Step 1. Using CONSOLE-1, select the "PRIVATE-CALL" tile, set it to the secure mode at and click the Private Call function.

Step 2. Select the unit to be Private Called, in this case RADIO-1. (or select the numeric keypad and enter the Unit ID to be Private Called.)

Step 3. Click the Send button.

Step 4. Answer the Private Call with RADIO-1 and respond to the console.

Step 5. Verify RADIO-2 does not hear the private conversation.

Step 6. After completing the Private Call, return to the normal talkgroup mode.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.32 Console Initiated Private Call to a Console

1. DESCRIPTION

Private Conversation is a selective calling feature that allows a dispatcher or radio user to carry on one-to-one conversation that is heard only by the two parties involved. Subscriber units receiving a private call will sound an alert tone. As with other call types, Private Calls operate across sites as well as within the same site. MCC 7100/7500 Console can use the feature to communicate with another MCC 7100/7500 Console in the same or another Console Site.
Private call between the two Consoles is supported for MCC 7100/7500 Consoles only.

SETUP

RADIO-1 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1
CONSOLE-2 - TALKGROUP 1
CONSOLE-3 - TALKGROUP 1

VERSION #1.010

2. TEST

Step 1. Using CONSOLE-1, select the "PRIVATE-CALL" tile and click the Private Call function.

Step 2. Select the numeric keypad.

Step 3. Using the displayed keypad enter the unit ID to be Private Called (CONSOLE-2) or select CONSOLE-2 from the drop down list (if listed).

Step 4. Click the Send button.

Step 5. At CONSOLE-2, answer the Private Call from CONSOLE-1 and verify CONSOLE-2 is able to hear the CONSOLE-1 audio. Also verify that the CONSOLE-1 can hear the CONSOLE-2 audio.

Step 6. Verify that RADIO-1 and CONSOLE-3 do not hear the audio for the Private Call.

Step 7. Verify that no site resources are used as this is an IP based call from Console user to Console user.

Step 8. End the Private Call.

Pass____ Fail____

6.1.33 Console Priority

1. DESCRIPTION

Console Operator Positions have ultimate control of transmitted audio on an assigned voice channel resource. The Console Position has the capability to take control of an assigned voice channel for a talkgroup call so that the operator's audio overrides any subscriber audio. Console priority is a feature that enables dispatchers to gain immediate access to an assigned voice channel so that a central point of audio control exists.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1

VERSION #1.020

2. TEST

Step 1. Initiate a Talkgroup call from RADIO-1 on TALKGROUP 1. Keep this call in progress until the test has completed.

Step 2. Observe that RADIO-2 receives the call.

Step 3. While the call is in progress, key up CONSOLE-1 on TALKGROUP 1.

Step 4. Observe that RADIO-2 is now receiving audio from CONSOLE-1 on TALKGROUP 1.

Step 5. De-key CONSOLE-1.

Step 6. Verify RADIO-2 now receives RADIO-1 audio.

Step 7. End the TALKGROUP 1 call from RADIO-1.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.34 Alarm Input / Outputs - Aux I/O Option

1. DESCRIPTION

A dispatch console user can simultaneously view the status of all Aux I/O instances pertaining to the AUX I/O object. Change to one AUX I/O instance is simultaneously viewable by all other instances.

SETUP

CONSOLE-1 - TALKGROUP 1
CONSOLE-1 - SITE - CONSITE-1
CONSOLE-2 - TALKGROUP 1
CONSOLE-2 - SITE - CONSITE-1
For this test-
An instance of AUXIO_1 has been created and is assigned as a standalone tile on CONSOLE-1 and CONSOLE-2.

VERSION #1.020

2. TEST

Step 1. Assign an instance of AUXIO_1 to CONSOLE-1 to a talk resource tile on TALKGROUP 1

Step 2. Assign instance of AUXIO_1 to CONSOLE-2 to a talk resource tile on TALKGROUP 1.

Step 3. Change the status of AUXIO_1 on CONSOLE-1.

Step 4. Verify the standalone tile as well as the talk resource instance on CONSOLE-1 and CONSOLE-2 change and display the same state for AUXIO_1.

Step 5. Change the status of AUXIO_1 on CONSOLE-2.

Step 6. Verify the standalone tile as well as the talk resource instance on CONSOLE-1 and CONSOLE-2 change and display the same state for AUXIO_1.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.35 Channel Marker

1. DESCRIPTION

A Channel Marker is a distinct, short duration, audible tone over radio and Console speakers. The tone is initiated and cancelled by a console operator. The tone can be initiated only for the talkgroups or conventional channels. On initiation, it is generated periodically when there is no voice activity. The tone can be used for various purposes. The primary purpose of the tone is to inform radio users that the conventional channel or the trunked talkgroup is currently involved in a high priority situation and they should stay off the channel unless they are involved in the high priority situation. The tone also informs the users that a console operator is actively monitoring the talkgroup.
Note that the Channel Marker tone will only start when there is no voice activity for the selected Talkgroup or conventional channel. The channel Marker tone is sent in a current transmission mode of the Console user.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
CONSOLE-1 - TALKGROUP 1
CONSOLE-2 - TALKGROUP 1

VERSION #1.010

2. TEST

Step 1. Initiate a Channel Marker tone on TALKGROUP 1 from CONSOLE-1.

Step 2. Verify RADIO-1 and RADIO-2 can monitor the Channel Marker tone on TALKGROUP 1.

Step 3. Verify CONSOLE-1 and CONSOLE-2 also monitor the Channel Marker tone on TALKGROUP 1.

Step 4. Initiate a call from RADIO-1 and continue to key longer than the preset Channel Marker tone period for TALKGROUP 1.

Step 5. Verify while RADIO-1 is keyed, the Channel Marker tone is suppressed.

Step 6. Verify after RADIO-1 de-keys, the periodic Channel Marker tone continues to be transmitted on TALKGROUP 1.

Step 7. Cancel the Channel Marker on TALKGROUP 1 from CONSOLE-1.

Step 8. Verify the Channel Marker is no longer monitored on TALKGROUP 1.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.36 Console Tactical/Normal Priority

1. DESCRIPTION

The Tactical/Normal Priority feature is initiated at the console operator position and provides the dispatcher with the ability to change the priority for a particular talkgroup. When selected, a higher priority level (level 2) is assigned to the talkgroup. This overrides the priority level set in the system manager. Only emergency calls have a higher priority than tactical.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 2
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 3
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 1
RADIO-4 - SITE - SITE 1
RADIO-5 - TALKGROUP 2
RADIO-5 - SITE - SITE 1
RADIO-6 - TALKGROUP 3
RADIO-6 - SITE - SITE 1
RADIO-7 - TALKGROUP 4 (If testing with TDMA mode)
RADIO-7 - SITE - SITE 1
CONSOLE-1 - TALKGROUP 1, TALKGROUP 2, and TALKGROUP 3

Note: The priority level for the talkgroups selected should be the same.

VERSION #1.030

2. TEST

Step 1. Simulate a busy system by disabling all voice paths except for one at SITE 1. (If this is a TDMA site, it will be necessary to have a call in progress with RADIO-7 for the duration of the test.)

Step 2. Initiate a Talkgroup Call with RADIO-1 and observe it is received by RADIO-4. Keep this call in progress until instructed to end the call.

Step 3. Key RADIO-2 and observe that the radio receives a busy. Key RADIO-3 and observe that the radio receives a busy.

Step 4. End the talkgroup call established in step 2. Verify RADIO-2 receives the first callback and make a call to RADIO-5 upon receipt of the callback indication.

Step 5. End the call between RADIO-2 and RADIO-5. Verify that RADIO-3 receives a call back and is able to communicate with RADIO-6.

Step 6. Enable Tactical Priority for TALKGROUP 3 from CONSOLE-1. Initiate a Talkgroup Call with RADIO-1 and observe that it is received by RADIO-4. Keep this call in progress until instructed to end the call.

Step 7. Key RADIO-2 and observe that the radio receives a busy then key RADIO-3 and observe that the radio receives a busy.

Step 8. End the Talkgroup Call established by RADIO-1. Verify RADIO-3 now receives the first callback and and is able to communicate with RADIO-6.

Step 9. End the call between RADIO-3 and RADIO-6. Verify that RADIO-2 receives a call back and is able to communicate with RADIO-5.

Step 10. Disable Tactical Priority for TALKGROUP 3.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.37 Instant Recall Recorder (IRR) Operation

1. DESCRIPTION

The Instant Recall Recorder (IRR) allows for audio from a phone call or a radio call to be played back at the MCC 7500 or MCC 7100 Console position. Thirty minutes of audio is saved for radio and an additional thirty minutes for telephone. The audio is saved on the positions hard disk in the form of a .wav file.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1

CONSOLE-1 - TALKGROUP 1 running IRR application.

VERSION #1.020

2. TEST

Step 1. Select a radio channel on the CONSOLE-1 application window.

Step 2. Select IRR from the CONSOLE-1 toolbar.

Step 3. Initiate radio communication between RADIO-1 and RADIO-2.

Step 4. Verify a new entry appears in the IRR log window.

Step 5. Select the new entry from the list.

Step 6. Press play and verify conversation replay.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.38 Activity Log

1. DESCRIPTION

The Console activity log will show all traffic for the resource assigned to that console to include the time, radio alias, TG, PTT ID and Emergency Call.

The dispatcher has the capability of selecting a logged call within in the "Activity Log Window" for instant transmit on the corresponding logged resource.

This activity log can be logged to a text file for archival purposes.

Note: The log file in the ops will only be seen if you first check Log Activity in Elite Admin application then in folder options uncheck hide hidden system files. The location will be c:\Program Data\MCC7500\MessageMonitorLogs.

SETUP

RADIO-1 – TALKGROUP 1
RADIO-2 – TALKGROUP 2
RADIO-3 – TALKGROUP 3
RADIO-4 – TALKGROUP 4
CONSOLE-1 – TALKGROUP 1, TALKGROUP 2, TALKGROUP 3, TALKGROUP 4

VERSION #1.020

2. TEST

Step 1. On CONSOLE-1 select the "Show Activity Log" button on the tool bar to open the Activity Log Window.

Step 2. Initiate calls on RADIO-1, RADIO-2, RADIO-3 and RADIO-4 to log call information and verify calls are displayed in the activity log window.

Step 3. Select a logged call in the Activity Log Window and verify that the Channel Control Window (CCW) at the top of the Activity log window changes to the corresponding resource. Verify the dispatcher is capable of responding via the instant transmit button.

Step 4. Open the text file created by the Activity Log and verify call traffic has been archived to the document file.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.39 Radio Check

1. DESCRIPTION

Radio Check is a RCM command used to verify that a radio is active in the trunking system. The Radio Check command causes the Zone Controller to poll for the radio requesting that the radio re-affiliate. When the radio re-affiliates, the RCM then has the knowledge that the radio is powered on and within system range. If the radio is involved in a conversation, whether group or interconnect, the RCM application displays a message to that effect.

The information displayed by the RCM in response to the Radio Check command is: current talkgroup affiliation, the multigroup that the talkgroup is attached to (assuming the talkgroup belongs to a multigroup), and the site where the radio is affiliated. If the radio does not respond to the Radio Check command, a message to that effect displays.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 2

VERSION #1.030

2. TEST

Step 1. Select the Status menu and then select the Radio Check item to open the Radio Check window.

Step 2. Enter the ID or alias of RADIO-2 into the entry box and click the Apply button.

Step 3. Observe the radio is polled and the current radio information is displayed on the RCM.

Step 4. Turn off RADIO-1.

Step 5. Enter the ID or alias of the RADIO-1 into the entry box and click the Apply button.

Step 6. Observe that the RCM displays "Radio Not Found."

Step 7. Depress and hold the PTT button of RADIO-2 until instructed to release.

Step 8. Enter the ID or alias of RADIO-2 into the entry box and click the Apply button. Observe that a busy for the radio is displayed on the RCM.

Step 9. Release the PTT button on RADIO-2.

Step 10. Observe the radio is polled and the current radio information is displayed on the RCM.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.40 Dynamic Regrouping

1. DESCRIPTION

Dynamic Regrouping allows the Radio Control Manager (RCM) to assign individual radios operating in different talkgroups to a temporary talkgroup via the Regroup command. Network managers or supervisors can override individual radio talkgroup selections by steering regrouped subscribers to a new talkgroup containing users which need to communicate on a temporary basis. After receiving a Regroup command, a radio will ignore the current setting of the talkgroup selector and move to the target talkgroup specified in the Regroup command. Unless the supervisor issues a LOCK command, the radio user can deselect the target talkgroup by selecting another talkgroup using the radio selector. A unique location on the radio selector is reserved for the target talkgroup following a Regroup command.

Dynamic Regrouping assignments can be initiated rapidly, but not instantaneously. Regrouping is best suited for planned activities or occasional changes from normal routines. It is not intended for immediate responses such as high speed chases or for a rapid deployment on a per incident basis.

Regrouped radios receiving a second Regroup command will move to the new target talkgroup specified in the second command. When a regrouped radio receives a Regroup command, all information pertaining to the previous Regroup command is lost. A Cancel Regroup command or a Revert returns an individual radio to its normal operation.

Note - RCM user must be attached to primary and target talkgroup.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
RADIO-3 - TALKGROUP 2
RADIO-4 - TALKGROUP 2

VERSION #1.030

2. TEST

Step 1. With the RCM open from the main Command tab click on the “+” button . Choose Regroup.

Step 2. Enter TALKGROUP 3 in the target field.

Step 3. Enter the IDs or aliases of RADIO-1, RADIO-2, RADIO-3 and RADIO-4.

Step 4. Once all desired radio information is entered and appears in the command window click the submit to initiate the command.

Step 5. Observe all radios are regrouped and are able to communicate on TALKGROUP 3.

Step 6. Switch the Subscriber to the Dynamic Regroup channel.

Step 7. Observe that the radios are able to select different talkgroups and are not locked onto the regrouped mode. Note: The Talkgroup selector knob has to be set to the dynamic regroup position before switching to any other talkgroup.

Step 8. Observe that the Regroup task appears in the Command tab.

Step 9. Issue a Selector Lock command all four radios and verify their selectors have been locked.

Step 10. Revert both commands and verify the radios have returned to normal operation.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.41 Selective Radio Inhibit

1. DESCRIPTION

The INHIBIT command issued by the Radio Control Manager (RCM) disables a radio, preventing it from transmitting or receiving any audio. All of the radio's functionality ceases while a radio is inhibited by the RCM. Once inhibited, the radio cannot be used to monitor voice channels or for any other radio user initiated activity. Note that an inhibited radio still monitors the control channel so that it can be re-enabled with the Cancel Inhibit command. Upon receiving the Cancel Inhibit command from the RCM, the radio returns to its normal operation.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1

VERSION #1.030

2. TEST

Step 1. With the RCM open from the main Command tab click on the “+” button .

Step 2. Enter the IDs or aliases of RADIO-1.

Step 3. Select "Selective Inhibit" button.

Step 4. Once all desired radio information is entered and appears in the command window click the submit to initiate the command.

Step 5. Observe RADIO-1 is inhibited and appears to be dead.

Step 6. Observe that the Inhibit task appears in the Command tab.

Step 7. Cancel the Inhibit by selecting the task in the Command tab and clicking the Revert button to submit the task.

Step 8. Observe that the Cancel Inhibit task appears in the Command tab and that RADIO-1 is returned to normal operation.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.42 Radio Snapshot

1. DESCRIPTION

Snapshot is a Radio Control Manager (RCM) command used to retrieve information about an individual radio. Information provided by the RCM application in response to the Snapshot command includes: the serial number of the radio, current talkgroup/multigroup and site affiliations; the Regroup, Inhibit, and Selector Lock state of the radio. Snapshot information is taken from the system databases. The Snapshot command does not initiate any communication with the target radio.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 2
RADIO-3 - TALKGROUP 2
RADIO-3 - SITE - SITE 3

* RADIO-1 and RADIO-3 must be programmed with Dynamic Regrouping capability.

*Make sure Radio Users are configured with a "Radio Primary Talkgroup Assignment" in the UCM.

VERSION #1.020

2. TEST

Step 1. Submit a Dynamic Regroup command for RADIO-1 and RADIO-3 to be regrouped to TALKGROUP 3.

Step 2. At the RCM, initiate the Snapshot command for RADIO-1.

Step 3. Verify that the RCM shows RADIO-1 affiliated to SITE 1 and that its current Regroup state is "Regroup."

Step 4. At the RCM, revert the dynamic regrouping on RADIO-1 and RADIO-3.

Step 5. Initiate the Snapshot command for RADIO-1.

Step 6. Verify RADIO-1 shows an affiliation to SITE 1 and that its current Regroup state is "Cancel Regroup."

Step 7. At the RCM, inhibit RADIO-2 and then initiate the Snapshot command for RADIO-2.

Step 8. Verify RADIO-2 shows an affiliation to SITE 2 and that its current Inhibit state is "Selective Inhibit."

Step 9. At the RCM, revert RADIO-2 and then initiate the Snapshot command for RADIO-2.

Step 10. Verify RADIO-2 shows an affiliation to SITE 2 and that its current Inhibit state is "Cancel Inhibit."

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.43 Unified Event Manager - Base Views

1. DESCRIPTION

The Unified Event Manager (UEM) in its base configuration provides a number of views. The purpose of this test is to demonstrate the key views available from the UEM.

The Physical Summary and Detail View (Physical Map) and Service Summary and Detail View (Service Map) in previous releases are deprecated and are replaced by the Zone Map. Custom views can be saved and retrieved by other NM Client users.

SETUP

NMclient01 - UEM session up and running.

VERSION #1.010

2. TEST

Step 1. Alarms View: In the navigation pane expand Fault Management and select Alarms. The view displays active alarms for managed resources, displaying impacted managed resources and specific objects on the managed resource along with selected alarm properties.

Step 2. Alarm View Search: Customize the Active Alarms display by selecting the View option from the menu bar, then select Search. Perform a Managed Resource search for channels, site controllers and routers by entering "Contains" and ch, sc, and z00 respectively in the search fields to perform the three separate searches. For each of the three searches a filtered alarm view is displayed that contains alarms for the appropriate device in the search.

Step 3. Network Events View: In the navigation pane expand Fault Management and select Network Events. The view displays recent events reported for managed resources, displaying impacted managed resources and specific object on the managed resource along with selected event properties. Alarming events are base for creating alarm objects.

Step 4. Physical Summary View: In the navigation pane expand Zone Views and Physical, then select Physical Summary View. The Physical Summary View provides an aggregated alarm severity status of the devices located at all subnets in the Zone.

Step 5. Service Summary View: In the navigation pane expand Zone Views and Service, then select Service Summary View. The Service Summary View provides a quick summary of the service status of sites in a Zone, including access to Channel status.

Step 6. Zone Map: In the navigation pane, expand Zone Views and select Zone Map. The Zone Map view provides an aggregated alarm severity status of the devices located at discovered sites in the Zone.

Step 7. Network Database: In the navigation pane select Network Database. The Network Database displays a list of all discovered Managed Resources and Sites. The display includes properties of each resource as well as overall severity of all objects and/or sub resources

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.44 Site Path Failure (Ethernet) Reports to the Unified Event Manager

1. DESCRIPTION

This test will demonstrate that the Unified Event Manager (UEM) alarms view is able to capture information about various failures at the system and zone level.

This test simulates a microwave/transport failure by removing a customer selected site data link and monitoring the alerts.

Note: If using a Simulcast site, this test refers to the Prime Site links. While failures would be seen at the subsite level if a Subsite link were failed, the site would not drop into Site Trunking.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
NMclient01 - UEM session up and running.

* RADIO-1 should be "Site Locked"

VERSION #1.030

2. TEST

Step 1. Remove the Ethernet cable(s) to the SITE 1 router(s) (If Simulcast, this refers to the Prime Site router(s)) at the site where RADIO-1 is affiliated. Be certain to remove the Ethernet cable from both routers if redundant site links are being utilized.

Step 2. Observe the UEM reports CommFailure alarms for the devices at the affected site.

Step 3. In addition, observe that the site is now in the Site Trunking mode.

Step 4. Reconnect the Ethernet cable(s) disconnected in Step 1.

Step 5. Observe the site returns to the Wide Area Trunking mode.

Step 6. Observe the topology and alarms/events that appear in the UEM, indicating the site is in recovery and after a period of time has recovered.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.45 Station Power Amp Failure Reports to the Unified Event Manager (UEM)

1. DESCRIPTION

This test will demonstrate that the Unified Event Manager (UEM) alarms view is able to capture information about various failures at the system and zone level.
A station will be keyed while the output is unloaded to simulate a power amp failure. The failures will be monitored on the UEM.

Note: For safety, either power down the station or TX Inhibit it before disconnecting or re-connecting the dummy load to prevent accidental keying of the station.

Note: This test should be done on a site with more than 2 channels. Failsoft will occur if the test is done on a 2 channel site.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 2
RADIO-2 - SITE - SITE 1
NMclient01 - UEM session up and running.

* All Radios should be "Site Locked"

VERSION #1.020

2. TEST

Step 1. Verify that the power amp of the station to be tested has no active alarms against it.

Step 2. Disconnect the dummy load/antenna from the station.

Step 3. Make several talkgroup calls using RADIO-1 until the test station has been keyed.

Step 4. Observe that an alarm indicating a Power Amp failure appears on the UEM alarms view. For SmartX sites you will need to look at event view to see cause of alarm.

Step 5. Reconnect the dummy load/antenna disconnected in Step 3.

Step 6. In approximately 5 minutes, observe the changes to the alarm on the UEM, indicating the module is restored to service.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.1.46 Core Router Failure Reports to the Unified Event Manager

1. DESCRIPTION

This test will demonstrate that the Unified Event Manager (UEM) alarms view is able to capture information about various failures at the system and zone level.

A Core Router/Gateway will be powered off to simulate a failure. The system health will be monitored on UEM.

NOTE: Powering a combine Core/Exit Router/Gateway down will affect both the Core and Exit routing functions.

SETUP

NMclient01 - UEM session up and running.

VERSION #1.040

2. TEST

Step 1. Verify that the Router/Gateway to be tested displays without failures (normal) on UEM. The core router is contained in the specific subnet that it is physically collocated with in the network.

Step 2. Power down the Router/Gateway.

Step 3. Observe that an alarm indicating a Router/Gateway failure appears on the UEM alarms view.

Step 4. Restore power to the Router/Gateway.

Step 5. Observe the changes to the alarm in UEM, indicating the Router/Gateway is enabling.

Step 6. Observe that alarm view updates in the UEM, indicating the Router/Gateway has recovered and is enabled.

Pass____ Fail____

Use or disclosure of this proposal is subject to the restrictions on the cover page.

6.2 SIGNOFF CERTIFICATE

By their signatures below, the following witnesses certify they have observed the system Acceptance Test Procedures.

Signatures

WITNESS: _____Date: _____

Please Print Name: _____ _____

Initials:

Please Print Title: _____

WITNESS: _____Date: _____

Please Print Name: _____ _____

Initials:

Please Print Title: _____

WITNESS: _____Date: _____

Please Print Name: _____ _____

Initials:

Please Print Title: _____

SECTION 7

WARRANTY AND POST WARRANTY SERVICES

Motorola has over 80 years of experience supporting mission critical communications for public safety and public service agencies. Motorola's technical and service professionals use a structured approach to life cycle service delivery and provide comprehensive maintenance and support throughout the life of the system. The value of support is measured by system availability, which is optimized through the use of proactive processes, such as preventive maintenance, fault monitoring and active response management. System availability is a function of having in place a support plan delivered by highly skilled support professionals, backed by proven processes, tools, and continuous training.

7.1 THE MOTOROLA SERVICE DELIVERY TEAM

Customer Support Manager

Your Motorola Customer Support Manager provides coordination of support resources to enhance the quality of service delivery and to ensure your satisfaction. The Customer Support Manager (CSM) is responsible to oversee the execution of the Warranty and Service Agreement and ensure that Motorola meets its response and restoration cycle time commitments. The CSM will supervise and manage the Motorola Authorized Servicer's functions.

Motorola System Technologists

The Motorola System Technologists (ST) are available to assist Motorola's Authorized Servicers when needed for network health and operations.

Motorola System Support Center

Located in Schaumburg, Illinois, the System Support Center (SSC) is a key component to the overall management and system maintenance. As detailed in this Customer Support Plan, the following services are provided by the System Support Center:

- Network Monitoring
- Dispatch Service
- Infrastructure Repair with Advanced Replacement
- Technical Support

Motorola Local Service Provider

Motorola's authorized service centers are staffed with trained and qualified technicians. They provide rapid response, repair, restoration, installations, removals, programming, and

Motorola has proven experience to deliver mission critical network support

- Extensive Experience – Motorola has over 80 years of experience supporting mission critical communications and the Public Safety community.
- Capacity to Respond – Motorola's network of local service centers, repair depots, system support center and parts support enable Motorola to provide quick and effective service delivery.
- Flexibility and Scalability – Motorola's Support Plans are customized to meet individual Customer needs.
- Skills and Process – Motorola uses a well-established, structured, and disciplined approach to provide service delivery. Motorola's team of well-trained and committed people understands the communications technology business.

scheduled preventive maintenance tasks for site standards compliance and RF operability. Motorola's authorized service centers are assessed annually for technical and administrative competency.

Motorola places great emphasis on ensuring that communications systems, such as the one proposed for City of Joplin, meet high standards for design, manufacture, and performance. To enhance the value of the communications system being acquired, Motorola offers customized warranty and post-warranty services as outlined in this section.

7.2 WARRANTY SERVICES

Motorola will provide warranty services per our standard warranty terms and conditions as outlined within the Communication Systems Agreement within this proposal. In addition to the Standard Commercial Warranty, the service products that comprise the Custom Warranty package are listed below along with a brief description.

7.2.1 Dispatch Service

Motorola's Dispatch Service ensures that trained and qualified technicians are dispatched to diagnose and restore your communications network. Following proven response and restoration processes, the local authorized service center in your area is contacted and a qualified technician is sent to your site. An automated escalation and case management process is followed to ensure that technician site arrival and system restoration comply with contracted response and restore times. Once the issue has been resolved, the System Support Center verifies resolution and with your approval, closes the case. Activity records are also available to provide a comprehensive history of site performance, issues, and resolution.

7.2.2 Infrastructure Repair with Advanced Replacement

Infrastructure Repair with our Advanced Replacement upgrade supplements your spares inventory with Motorola's centralized inventory of critical equipment. In advance of Motorola repairing the malfunctioning unit, a replacement unit is sent to you within 24 hours to ensure a spare unit is available. Upon receipt of the malfunctioning unit, Motorola repairs the unit and replace it in our centralized inventory.

7.2.3 Technical Support Service

Motorola Technical Support service provides an additional layer of support through centralized, telephone consultation for issues that require a high level of communications network expertise and troubleshooting capabilities. Technical Support is delivered by the System Support Center (SSC). The SSC is staffed with trained, skilled technologists specializing in the diagnosis and swift resolution of network performance issues. These technologists have access to a solutions database as well as in house test labs and development engineers. Technical Support cases are continuously monitored against stringent inbound call management and case management standards to ensure rapid and consistent issue resolution. Technical Support service translates into measurable, customer-specific metrics for assured network performance and system availability.

7.2.4 Network Monitoring Service

Network Monitoring Service can help keep your network at optimum availability so it is ready to serve mission critical communications needs. By watching over the network continuously, Network Monitoring Service takes action whenever needed, and resolves network problems. We often

intervene and correct the problem before you even know a problem exists. Network Monitoring Service provides improved productivity and enhanced network performance, which in turn helps to increase your technology Return-On-Investment.

Using a combination of network monitoring software, automated alerts, and remote diagnostics inquiries, our System Support technologists actively monitor your network to maximize network uptime and overall preparedness…for the expected *and* unexpected. Upon receiving an alert, our team immediately performs a series of diagnostics to assess the problem. Often the situation can be resolved remotely, but when additional attention is required, local field technicians are dispatched immediately to your site to achieve restoration.

Motorola's Network Monitoring service is a vital component of an intelligent communication support plan that keeps your business operating smoothly, your costs down, and assures maximum preparedness at all times.

Specifically, Network Monitoring Service provides:

- Improved network availability
- Remote and timely resolution to minimize downtime
- Cost efficiencies
- Optimize time at site due to assessment and knowledge transfer before dispatch
- Minimize unnecessary trips to site
- Mitigate need for 24x7 operations monitoring center
- Detailed Reports

7.3 POST WARRANTY SERVICES

As Motorola's continuing commitment to supporting your system, warranty services can be extended after the first year to provide maintenance and service support in future years. Any of the services that we identify can be customized in future years, and are available for purchase either in "System Support Services" packages or as individual service offerings. These system support services significantly benefit City of Joplin because the system can be effectively supported after the warranty period, thereby maximizing the operational capabilities and useful life of the system and protecting your investment in the system.

Warranty and Post Warranty Service Overview	Warranty Year	Post Warranty Year
Dispatch Service	✓	✓
Infrastructure Repair with Advanced Replacement	✓	✓
Technical Support Service	✓	✓
Network Monitoring Service	✓	✓

7.4 SUMMARY

Whether it's a routine service call, or a disaster situation, Motorola understands its responsibility and takes pride in its commitment to deliver proven response service to the public safety community. Motorola has the capability to provide the technical, administrative, consultative, and maintenance repair services needed to support, enhance, and maintain the effectiveness of your communications network. Motorola's goal is to provide City of Joplin with the qualified resources, to maintain and improve system operation and availability, and to deliver world class service support.

SECTION 8

PRICING SUMMARY

Description	Price $
Replace existing 7.1 switch with a new 7.16 switch. 5 MCC7500 Console Positions, AIS Trunked Logging Recorder, Console & Radio Licenses, Networking Mgmt License & Control Stations.	**$720,687**
System Implementation Services	**$287,630**
Total Cost with System Implementation Service:	**$1,008,317**

Lease Term Options	Lease Rate	Annual Payment
Five Years	**2.60%**	**$217,662**
Seven Years	**2.72%**	**$160,138**
Ten Years	**2.97%**	**$118,025**

Lifecycle Products (NSAD) w/o SUS	2018	2019	2020	2021	2022	2023
SUA II Total NSAD	**$85,766**	**$85,766**	**$85,766**	**$85,766**	**$85,766**	**$85,766**
Support Services	**$58,500**	**$58,500**	**$58,500**	**$58,500**	**$58,500**	**$58,500**
Yearly Total:	**$144,266**	**$144,266**	**$144,266**	**$144,266**	**$144,266**	**$144,266**
Total 6 Year Contract:						**$865,596**

Incentive

If contract is signed before or by November 21st, 2016. Motorola will include:
-System Management Training
-Single Channel Addition to Radio Site
-4 APX 6000 Portable Radios

SECTION 9

TERMS AND CONDITIONS

Terms and Conditions are included on the pages that follow.

Communications System Agreement

Motorola Solutions, Inc. ("Motorola") and City of Joplin, Missouri ("Customer") enter into this "Agreement," pursuant to which Customer will purchase and Motorola will sell the System, as described below. Motorola and Customer may be referred to individually as a "Party" and collectively as the "Parties." For good and valuable consideration, the Parties agree as follows:

Section 1 EXHIBITS

The exhibits listed below are incorporated into and made a part of this Agreement. In interpreting this Agreement and resolving any ambiguities, the main body of this Agreement takes precedence over the exhibits and any inconsistency between Exhibits A through E will be resolved in their listed order.

Exhibit A	Motorola "Software License Agreement"
Exhibit B	"Payment Schedule"
Exhibit C	"Technical and Implementation Documents"
C-1	"System Description" (including System Diagrams) dated September 30, 2016
C-2	"Equipment List" dated September 30, 2016
C-3	"Statement of Work" dated September 30, 2016
C-4	"Acceptance Test Plan" or "ATP" dated September 30, 2106
C-5	"Performance Schedule" dated September 30, 2016
Exhibit D	Service Statement(s) of Work (Warranty and Post Warranty Services) dated September 30, 2016
Exhibit E	"System Acceptance Certificate"

Section 2 DEFINITIONS

Capitalized terms used in this Agreement have the following meanings:

2.1. "Acceptance Tests" means those tests described in the Acceptance Test Plan.

2.2. "Administrative User Credentials" means an account that has total access over the operating system, files, end user accounts and passwords at either the System level or box level. Customer's personnel with access to the Administrative User Credentials may be referred to as the Administrative User.

2.3. "Beneficial Use" means when Customer first uses the System or a Subsystem for operational purposes (excluding training or testing).

2.4. "Confidential Information" means any information that is disclosed in written, graphic, verbal, or machine-recognizable form, and is marked, designated, or identified at the time of disclosure as being confidential or its equivalent; or if the information is in verbal form, it is identified as confidential at the time of disclosure and is confirmed in writing within thirty (30) days of the disclosure. Confidential Information does not include any information that: is or becomes publicly known through no wrongful act of the receiving Party; is already known to the receiving Party without restriction when it is disclosed; is or becomes, rightfully and without breach of this Agreement, in the receiving Party's possession without any obligation restricting disclosure; is independently developed by the receiving Party without breach of this Agreement; or is explicitly approved for release by written authorization of the disclosing Party.

2.5. "Contract Price" means the price for the System, excluding applicable sales or similar taxes and freight charges.

2.6. "Effective Date" means that date upon which the last Party executes this Agreement.

2.7. "Equipment" means the equipment that Customer purchases from Motorola under this Agreement. Equipment that is part of the System is described in the Equipment List.

2.8. “Force Majeure” means an event, circumstance, or act of a third party that is beyond a Party’s reasonable control (e.g., an act of God, an act of the public enemy, an act of a government entity, strikes or other labor disturbances, hurricanes, earthquakes, fires, floods, epidemics, embargoes, war, and riots).

2.9. “Infringement Claim” means a third party claim alleging that the Equipment manufactured by Motorola or the Motorola Software directly infringes a United States patent or copyright.

2.10. “Motorola Software” means Software that Motorola or its affiliated company owns.

2.11. “Non-Motorola Software” means Software that another party owns.

2.12. “Open Source Software” (also called “freeware” or “shareware”) means software with either freely obtainable source code, license for modification, or permission for free distribution.

2.13. “Proprietary Rights” means the patents, patent applications, inventions, copyrights, trade secrets, trademarks, trade names, mask works, know-how, and other intellectual property rights in and to the Equipment and Software, including those created or produced by Motorola under this Agreement and any corrections, bug fixes, enhancements, updates or modifications to or derivative works from the Software whether made by Motorola or another party.

2.14. “Software” means the Motorola Software and Non-Motorola Software, in object code format that is furnished with the System or Equipment.

2.15. “Specifications” means the functionality and performance requirements that are described in the Technical and Implementation Documents.

2.16. “Subsystem” means a major part of the System that performs specific functions or operations. Subsystems are described in the Technical and Implementation Documents.

2.17. “System” means the Equipment, Software, and incidental hardware and materials that are combined together into an integrated system; the System is described in the Technical and Implementation Documents.

2.18. “System Acceptance” means the Acceptance Tests have been successfully completed.

2.19. “Warranty Period” means one (1) year from the date of System Acceptance or Beneficial Use, whichever occurs first.

Section 3 SCOPE OF AGREEMENT AND TERM

3.1. SCOPE OF WORK. Motorola will provide, install and test the System, and perform its other contractual responsibilities, all in accordance with this Agreement. Customer will perform its contractual responsibilities in accordance with this Agreement.

3.2. CHANGE ORDERS. Either Party may request changes within the general scope of this Agreement. If a requested change causes an increase or decrease in the cost or time required to perform this Agreement, the Parties will agree to an equitable adjustment of the Contract Price, Performance Schedule, or both, and will reflect the adjustment in a change order. Neither Party is obligated to perform requested changes unless both Parties execute a written change order.

3.3. TERM. Unless terminated in accordance with other provisions of this Agreement or extended by mutual agreement of the Parties, the term of this Agreement begins on the Effective Date and continues until the date of Final Project Acceptance or expiration of the Warranty Period, whichever occurs last.

3.4. ADDITIONAL EQUIPMENT OR SOFTWARE. For three (3) years after the Effective Date, Customer may order additional Equipment or Software if it is then available. Each order must refer to this Agreement and must specify the pricing and delivery terms. Notwithstanding any additional or contrary

terms in the order, the applicable provisions of this Agreement (except for pricing, delivery, passage of title and risk of loss to Equipment, warranty commencement, and payment terms) will govern the purchase and sale of the additional Equipment or Software. Title and risk of loss to additional Equipment will pass at shipment, warranty will commence upon delivery, and payment is due within thirty (30) days after the invoice date. Motorola will send Customer an invoice as the additional Equipment is shipped or Software is licensed. Alternatively, Customer may register with and place orders through Motorola Online ("MOL"), and this Agreement will be the "Underlying Agreement" for those MOL transactions rather than the MOL On-Line Terms and Conditions of Sale. MOL registration and other information may be found at http://www.motorola.com/businessandgovernment/ and the MOL telephone number is (800) 814-0601.

3.5. MAINTENANCE SERVICE. During the Warranty Period, in addition to warranty services, Motorola will provide maintenance services for the Equipment and support for the Motorola Software pursuant to the Statement of Work set forth in Exhibit D. Those services and support are included in the Contract Price. If Customer wishes to purchase additional maintenance and support services for the Equipment during the Warranty Period, or any maintenance and support services for the Equipment either during the Warranty Period or after the Warranty Period, the description of and pricing for the services will be set forth in a separate document. If Customer wishes to purchase extended support for the Motorola Software after the Warranty Period, it may do so by ordering software subscription services. Unless otherwise agreed by the parties in writing, the terms and conditions applicable to those maintenance, support or software subscription services will be Motorola's standard Service Terms and Conditions, together with the appropriate statements of work.

3.6. MOTOROLA SOFTWARE. Any Motorola Software, including subsequent releases, is licensed to Customer solely in accordance with the Software License Agreement. Customer hereby accepts and agrees to abide by all of the terms and restrictions of the Software License Agreement.

3.7. NON-MOTOROLA SOFTWARE. Any Non-Motorola Software is licensed to Customer in accordance with the standard license, terms, and restrictions of the copyright owner on the Effective Date unless the copyright owner has granted to Motorola the right to sublicense the Non-Motorola Software pursuant to the Software License Agreement, in which case it applies and the copyright owner will have all of Licensor's rights and protections under the Software License Agreement. Motorola makes no representations or warranties of any kind regarding Non-Motorola Software. Non-Motorola Software may include Open Source Software. All Open Source Software is licensed to Customer in accordance with, and Customer agrees to abide by, the provisions of the standard license of the copyright owner and not the Software License Agreement. Upon request by Customer, Motorola will use commercially reasonable efforts to determine whether any Open Source Software will be provided under this Agreement; and if so, identify the Open Source Software and provide to Customer a copy of the applicable standard license (or specify where that license may be found); and provide to Customer a copy of the Open Source Software source code if it is publicly available without charge (although a distribution fee or a charge for related services may be applicable).

3.8. SUBSTITUTIONS. At no additional cost to Customer, Motorola may substitute any Equipment, Software, or services to be provided by Motorola, if the substitute meets or exceeds the Specifications and is of equivalent or better quality to the Customer. Any substitution will be reflected in a change order.

3.9. OPTIONAL EQUIPMENT OR SOFTWARE. This paragraph applies only if a "Priced Options" exhibit is shown in Section 1, or if the parties amend this Agreement to add a Priced Options exhibit. During the term of the option as stated in the Priced Options exhibit (or if no term is stated, then for one (1) year after the Effective Date), Customer has the right and option to purchase the equipment, software, and related services that are described in the Priced Options exhibit. Customer may exercise this option by giving written notice to Seller which must designate what equipment, software, and related services Customer is selecting (including quantities, if applicable). To the extent they apply, the terms and conditions of this Agreement will govern the transaction; however, the parties acknowledge that certain provisions must be agreed upon, and they agree to negotiate those in good faith promptly after Customer delivers the option exercise notice. Examples of provisions that may need to be negotiated are: specific lists of deliverables, statements of work, acceptance test plans, delivery and implementation schedules,

payment terms, maintenance and support provisions, additions to or modifications of the Software License Agreement, hosting terms, and modifications to the acceptance and warranty provisions.

Section 4 PERFORMANCE SCHEDULE

The Parties will perform their respective responsibilities in accordance with the Performance Schedule. By executing this Agreement, Customer authorizes Motorola to proceed with contract performance.

Section 5 CONTRACT PRICE, PAYMENT AND INVOICING

5.1. CONTRACT PRICE. The Contract Price in U.S. dollars is $1,046,250.00. If applicable, a pricing summary is included with the Payment Schedule. Motorola has priced the services, Software, and Equipment as an integrated system. A reduction in Software or Equipment quantities, or services, may affect the overall Contract Price, including discounts if applicable.

5.2. INVOICING AND PAYMENT. Motorola will submit invoices to Customer according to the Payment Schedule. Except for a payment that is due on the Effective Date, Customer will make payments to Motorola within thirty (30) days after the date of each invoice. Customer will make payments when due in the form of a wire transfer, check, or cashier's check from a U.S. financial institution. Overdue invoices will bear simple interest at the maximum allowable rate. For reference, the Federal Tax Identification Number for Motorola Solutions, Inc. is 36-1115800.

5.3. FREIGHT, TITLE, AND RISK OF LOSS. Motorola will pre-pay and add all freight charges to the invoices. Title to the Equipment will pass to Customer upon shipment. Title to Software will not pass to Customer at any time. Risk of loss will pass to Customer upon delivery of the Equipment to the Customer. Motorola will pack and ship all Equipment in accordance with good commercial practices.

5.4. INVOICING AND SHIPPING ADDRESSES. Invoices will be sent to the Customer at the following address:

_____

_____

The address which is the ultimate destination where the Equipment will be delivered to Customer is:

_____

_____

The Equipment will be shipped to the Customer at the following address (insert if this information is known):

_____

_____

Customer may change this information by giving written notice to Motorola.

Section 6 SITES AND SITE CONDITIONS

6.1. ACCESS TO SITES. In addition to its responsibilities described elsewhere in this Agreement, Customer will provide a designated project manager; all necessary construction and building permits, zoning variances, licenses, and any other approvals that are necessary to develop or use the sites and mounting locations; and access to the work sites or vehicles identified in the Technical and Implementation Documents as reasonably requested by Motorola so that it may perform its duties in accordance with the Performance Schedule and Statement of Work. If the Statement of Work so indicates, Motorola may assist Customer in the local building permit process.

6.2. SITE CONDITIONS. Customer will ensure that all work sites it provides will be safe, secure, and in compliance with all applicable industry and OSHA standards. To the extent applicable and unless the Statement of Work states to the contrary, Customer will ensure that these work sites have adequate: physical space; air conditioning and other environmental conditions; adequate and appropriate electrical

power outlets, distribution, equipment and connections; and adequate telephone or other communication lines (including modem access and adequate interfacing networking capabilities), all for the installation, use and maintenance of the System. Before installing the Equipment or Software at a work site, Motorola may inspect the work site and advise Customer of any apparent deficiencies or non-conformities with the requirements of this Section. This Agreement is predicated upon normal soil conditions as defined by the version of E.I.A. standard RS-222 in effect on the Effective Date.

6.3. SITE ISSUES. If a Party determines that the sites identified in the Technical and Implementation Documents are no longer available or desired, or if subsurface, structural, adverse environmental or latent conditions at any site differ from those indicated in the Technical and Implementation Documents, the Parties will promptly investigate the conditions and will select replacement sites or adjust the installation plans and specifications as necessary. If change in sites or adjustment to the installation plans and specifications causes a change in the cost or time to perform, the Parties will equitably amend the Contract Price, Performance Schedule, or both, by a change order.

Section 7 TRAINING

Any training to be provided by Motorola to Customer will be described in the Statement of Work. Customer will notify Motorola immediately if a date change for a scheduled training program is required. If Motorola incurs additional costs because Customer reschedules a training program less than thirty (30) days before its scheduled start date, Motorola may recover these additional costs.

Section 8 SYSTEM ACCEPTANCE

8.1. COMMENCEMENT OF ACCEPTANCE TESTING. Motorola will provide to Customer at least ten (10) days notice before the Acceptance Tests commence. System testing will occur only in accordance with the Acceptance Test Plan.

8.2. SYSTEM ACCEPTANCE. System Acceptance will occur upon successful completion of the Acceptance Tests. Upon System Acceptance, the Parties will memorialize this event by promptly executing a System Acceptance Certificate. If the Acceptance Test Plan includes separate tests for individual Subsystems or phases of the System, acceptance of the individual Subsystem or phase will occur upon the successful completion of the Acceptance Tests for the Subsystem or phase, and the Parties will promptly execute an acceptance certificate for the Subsystem or phase. If Customer believes the System has failed the completed Acceptance Tests, Customer will provide to Motorola a written notice that includes the specific details of the failure. If Customer does not provide to Motorola a failure notice within thirty (30) days after completion of the Acceptance Tests, System Acceptance will be deemed to have occurred as of the completion of the Acceptance Tests. Minor omissions or variances in the System that do not materially impair the operation of the System as a whole will not postpone System Acceptance or Subsystem acceptance, but will be corrected according to a mutually agreed schedule.

8.3. BENEFICIAL USE. Customer acknowledges that Motorola's ability to perform its implementation and testing responsibilities may be impeded if Customer begins using the System before System Acceptance. Therefore, Customer will not commence Beneficial Use before System Acceptance without Motorola's prior written authorization, which will not be unreasonably withheld. Motorola is not responsible for System performance deficiencies that occur during unauthorized Beneficial Use. Upon commencement of Beneficial Use, Customer assumes responsibility for the use and operation of the System.

8.4 FINAL PROJECT ACCEPTANCE. Final Project Acceptance will occur after System Acceptance when all deliverables and other work have been completed. When Final Project Acceptance occurs, the parties will promptly memorialize this final event by so indicating on the System Acceptance Certificate.

Section 9 REPRESENTATIONS AND WARRANTIES

9.1. SYSTEM FUNCTIONALITY. Motorola represents that the System will perform in accordance with the Specifications in all material respects. Upon System Acceptance or Beneficial Use, whichever

occurs first, this System functionality representation is fulfilled. Motorola is not responsible for System performance deficiencies that are caused by ancillary equipment not furnished by Motorola which is attached to or used in connection with the System or for reasons or parties beyond Motorola's control, such as natural causes; the construction of a building that adversely affects the microwave path reliability or radio frequency (RF) coverage; the addition of frequencies at System sites that cause RF interference or intermodulation; or Customer changes to load usage or configuration outside the Specifications.

9.2. EQUIPMENT WARRANTY. During the Warranty Period, Motorola warrants that the Equipment under normal use and service will be free from material defects in materials and workmanship. If System Acceptance is delayed beyond six (6) months after shipment of the Equipment by events or causes within Customer's control, this warranty expires eighteen (18) months after the shipment of the Equipment.

9.3. MOTOROLA SOFTWARE WARRANTY. Unless otherwise stated in the Software License Agreement, during the Warranty Period, Motorola warrants the Motorola Software in accordance with the terms of the Software License Agreement and the provisions of this Section 9 that are applicable to the Motorola Software. If System Acceptance is delayed beyond six (6) months after shipment of the Motorola Software by events or causes within Customer's control, this warranty expires eighteen (18) months after the shipment of the Motorola Software. TO THE EXTENT, IF ANY, THAT THERE IS A SEPARATE LICENSE AGREEMENT PACKAGED WITH, OR PROVIDED ELECTRONICALLY WITH, A PARTICULAR PRODUCT THAT BECOMES EFFECTIVE ON AN ACT OF ACCEPTANCE BY THE END USER, THEN THAT AGREEMENT SUPERCEDES THIS SOFTWARE LICENSE AGREEMENT AS TO THE END USER OF EACH SUCH PRODUCT.

9.4. EXCLUSIONS TO EQUIPMENT AND MOTOROLA SOFTWARE WARRANTIES. These warranties do not apply to: (i) defects or damage resulting from: use of the Equipment or Motorola Software in other than its normal, customary, and authorized manner; accident, liquids, neglect, or acts of God; testing, maintenance, disassembly, repair, installation, alteration, modification, or adjustment not provided or authorized in writing by Motorola; Customer's failure to comply with all applicable industry and OSHA standards; (ii) breakage of or damage to antennas unless caused directly by defects in material or workmanship; (iii) Equipment that has had the serial number removed or made illegible; (iv) batteries (because they carry their own separate limited warranty) or consumables; (v) freight costs to ship Equipment to the repair depot; (vi) scratches or other cosmetic damage to Equipment surfaces that does not affect the operation of the Equipment; and (vii) normal or customary wear and tear.

9.5. WARRANTY CLAIMS. To assert a warranty claim, Customer must notify Motorola in writing of the claim before the expiration of the Warranty Period. Upon receipt of this notice, Motorola will investigate the warranty claim. If this investigation confirms a valid warranty claim, Motorola will (at its option and at no additional charge to Customer) repair the defective Equipment or Motorola Software, replace it with the same or equivalent product, or refund the price of the defective Equipment or Motorola Software. That action will be the full extent of Motorola's liability for the warranty claim. If this investigation indicates the warranty claim is not valid, then Motorola may invoice Customer for responding to the claim on a time and materials basis using Motorola's then current labor rates. Repaired or replaced product is warranted for the balance of the original applicable warranty period. All replaced products or parts will become the property of Motorola.

9.6. ORIGINAL END USER IS COVERED. These express limited warranties are extended by Motorola to the original user purchasing the System for commercial, industrial, or governmental use only, and are not assignable or transferable.

9.7. DISCLAIMER OF OTHER WARRANTIES. THESE WARRANTIES ARE THE COMPLETE WARRANTIES FOR THE EQUIPMENT AND MOTOROLA SOFTWARE PROVIDED UNDER THIS AGREEMENT AND ARE GIVEN IN LIEU OF ALL OTHER WARRANTIES. MOTOROLA DISCLAIMS ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Section 10 DELAYS

10.1. FORCE MAJEURE. Neither Party will be liable for its non-performance or delayed performance if caused by a Force Majeure. A Party that becomes aware of a Force Majeure that will significantly delay performance will notify the other Party promptly (but in no event later than fifteen days) after it discovers the Force Majeure. If a Force Majeure occurs, the Parties will execute a change order to extend the Performance Schedule for a time period that is reasonable under the circumstances.

10.2. PERFORMANCE SCHEDULE DELAYS CAUSED BY CUSTOMER. If Customer (including its other contractors) delays the Performance Schedule, it will make the promised payments according to the Payment Schedule as if no delay occurred; and the Parties will execute a change order to extend the Performance Schedule and, if requested, compensate Motorola for all reasonable charges incurred because of the delay. Delay charges may include costs incurred by Motorola or its subcontractors for additional freight, warehousing and handling of Equipment; extension of the warranties; travel; suspending and re-mobilizing the work; additional engineering, project management, and standby time calculated at then current rates; and preparing and implementing an alternative implementation plan.

Section 11 DISPUTES

The Parties will use the following procedure to address any dispute arising under this Agreement (a "Dispute").

11.1. GOVERNING LAW. This Agreement will be governed by and construed in accordance with the laws of the State in which the System is installed.

11.2. NEGOTIATION. Either Party may initiate the Dispute resolution procedures by sending a notice of Dispute ("Notice of Dispute"). The Parties will attempt to resolve the Dispute promptly through good faith negotiations including 1) timely escalation of the Dispute to executives who have authority to settle the Dispute and who are at a higher level of management than the persons with direct responsibility for the matter and 2) direct communication between the executives. If the Dispute has not been resolved within ten (10) days from the Notice of Dispute, the Parties may proceed to litigation.

11.3 INTENTIONALLY OMITTED.

11.4. LITIGATION, VENUE and JURISDICTION. If a Dispute remains unresolved for ten (10) days after receipt of the Notice of Dispute, either Party may then submit the Dispute to a court of competent jurisdiction in the state in which the System is installed. Each Party irrevocably agrees to submit to the exclusive jurisdiction of the courts in such state over any claim or matter arising under or in connection with this Agreement.

11.5. CONFIDENTIALITY. All communications pursuant to subsection 11.2 will be treated as compromise and settlement negotiations for purposes of applicable rules of evidence and any additional confidentiality protections provided by applicable law. The use of these Dispute resolution procedures will not be construed under the doctrines of laches, waiver or estoppel to affect adversely the rights of either Party.

Section 12 DEFAULT AND TERMINATION

12.1 DEFAULT BY A PARTY. If either Party fails to perform a material obligation under this Agreement, the other Party may consider the non-performing Party to be in default (unless a Force Majeure causes the failure) and may assert a default claim by giving the non-performing Party a written and detailed notice of default. Except for a default by Customer for failing to pay any amount when due under this Agreement which must be cured immediately, the defaulting Party will have thirty (30) days after receipt of the notice of default to either cure the default or, if the default is not curable within thirty (30) days, provide a written cure plan. The defaulting Party will begin implementing the cure plan immediately after receipt of notice by the other Party that it approves the plan. If Customer is the defaulting Party, Motorola may stop work on the project until it approves the Customer's cure plan.

12.2. FAILURE TO CURE. If a defaulting Party fails to cure the default as provided above in Section 12.1, unless otherwise agreed in writing, the non-defaulting Party may terminate any unfulfilled portion of this Agreement. In the event of termination for default, the defaulting Party will promptly return to the non-defaulting Party any of its Confidential Information. If Customer is the non-defaulting Party, terminates this Agreement as permitted by this Section, and completes the System through a third Party, Customer may as its exclusive remedy recover from Motorola reasonable costs incurred to complete the System to a capability not exceeding that specified in this Agreement less the unpaid portion of the Contract Price. Customer will mitigate damages and provide Motorola with detailed invoices substantiating the charges.

12.3. CONVENIENCE. Customer may terminate this Agreement (in whole or part) at any time. To exercise this right, Customer must provide to Motorola formal written notice at least thirty (30) days in advance of the effective date of the termination. The notice must explicitly state the effective date of the termination and whether the contract termination is in whole or in part, and if in part, which part is being terminated. If Customer exercises this right to terminate for convenience, it will be liable to pay Motorola for (1) the portion of the Contract Price attributable to the Equipment and/or Software delivered, and all services performed, on or before the effective date of the termination; and (2) costs and expenses that Motorola incurs as a result of the termination of the Agreement, including but not limited to costs and expenses associated with cancellation of subcontracts, restocking fees, removal of installation or test equipment, etc. If the portion of the Contract Price and/or the recoverable costs and expenses attributable to the termination of the Agreement are not readily ascertainable, Customer will be liable to pay Motorola for the reasonable value of such Equipment, Software, services, costs and expenses. Notwithstanding the above, Customer shall have no right to terminate this Agreement if Motorola has given Customer a notice of default and such default has not been cured.

Section 13 INDEMNIFICATION

13.1. GENERAL INDEMNITY BY MOTOROLA. Motorola will indemnify and hold Customer harmless from any and all liability, expense, judgment, suit, cause of action, or demand for personal injury, death, or direct damage to tangible property which may accrue against Customer to the extent it is caused by the negligence of Motorola, its subcontractors, or their employees or agents, while performing their duties under this Agreement, if Customer gives Motorola prompt, written notice of any the claim or suit. Customer will cooperate with Motorola in its defense or settlement of the claim or suit. This section sets forth the full extent of Motorola's general indemnification of Customer from liabilities that are in any way related to Motorola's performance under this Agreement.

13.2. GENERAL INDEMNITY BY CUSTOMER. Customer will indemnify and hold Motorola harmless from any and all liability, expense, judgment, suit, cause of action, or demand for personal injury, death, or direct damage to tangible property which may accrue against Motorola to the extent it is caused by the negligence of Customer, its other contractors, or their employees or agents, while performing their duties under this Agreement, if Motorola gives Customer prompt, written notice of any the claim or suit. Motorola will cooperate with Customer in its defense or settlement of the claim or suit. This section sets forth the full extent of Customer's general indemnification of Motorola from liabilities that are in any way related to Customer's performance under this Agreement.

13.3. PATENT AND COPYRIGHT INFRINGEMENT.

13.3.1. Motorola will defend at its expense any suit brought against Customer to the extent it is based on a third-party claim alleging that the Equipment manufactured by Motorola or the Motorola Software ("Motorola Product") directly infringes a United States patent or copyright ("Infringement Claim"). Motorola's duties to defend and indemnify are conditioned upon: Customer promptly notifying Motorola in writing of the Infringement Claim; Motorola having sole control of the defense of the suit and all negotiations for its settlement or compromise; and Customer providing to Motorola cooperation and, if requested by Motorola, reasonable assistance in the defense of the Infringement Claim. In addition to Motorola's obligation to defend, and subject to the same conditions, Motorola will pay all damages finally awarded against Customer by a court of competent jurisdiction for an Infringement Claim or agreed to, in writing, by Motorola in settlement of an Infringement Claim.

13.3.2. If an Infringement Claim occurs, or in Motorola's opinion is likely to occur, Motorola may at its option and expense: (a) procure for Customer the right to continue using the Motorola Product; (b) replace or modify the Motorola Product so that it becomes non-infringing while providing functionally equivalent performance; or (c) accept the return of the Motorola Product and grant Customer a credit for the Motorola Product, less a reasonable charge for depreciation. The depreciation amount will be calculated based upon generally accepted accounting standards.

13.3.3. Motorola will have no duty to defend or indemnify for any Infringement Claim that is based upon: (a) the combination of the Motorola Product with any software, apparatus or device not furnished by Motorola; (b) the use of ancillary equipment or software not furnished by Motorola and that is attached to or used in connection with the Motorola Product; (c) Motorola Product designed or manufactured in accordance with Customer's designs, specifications, guidelines or instructions, if the alleged infringement would not have occurred without such designs, specifications, guidelines or instructions; (d) a modification of the Motorola Product by a party other than Motorola; (e) use of the Motorola Product in a manner for which the Motorola Product was not designed or that is inconsistent with the terms of this Agreement; or (f) the failure by Customer to install an enhancement release to the Motorola Software that is intended to correct the claimed infringement. In no event will Motorola's liability resulting from its indemnity obligation to Customer extend in any way to royalties payable on a per use basis or the Customer's revenues, or any royalty basis other than a reasonable royalty based upon revenue derived by Motorola from Customer from sales or license of the infringing Motorola Product.

13.3.4. This Section 13 provides Customer's sole and exclusive remedies and Motorola's entire liability in the event of an Infringement Claim. Customer has no right to recover and Motorola has no obligation to provide any other or further remedies, whether under another provision of this Agreement or any other legal theory or principle, in connection with an Infringement Claim. In addition, the rights and remedies provided in this Section 13 are subject to and limited by the restrictions set forth in Section 14.

Section 14 LIMITATION OF LIABILITY

Except for personal injury or death, Motorola's total liability, whether for breach of contract, warranty, negligence, strict liability in tort, indemnification, or otherwise, will be limited to the direct damages recoverable under law, but not to exceed the price of the Equipment, Software, or services with respect to which losses or damages are claimed. ALTHOUGH THE PARTIES ACKNOWLEDGE THE POSSIBILITY OF SUCH LOSSES OR DAMAGES, THEY AGREE THAT MOTOROLA WILL NOT BE LIABLE FOR ANY COMMERCIAL LOSS; INCONVENIENCE; LOSS OF USE, TIME, DATA, GOOD WILL, REVENUES, PROFITS OR SAVINGS; OR OTHER SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES IN ANY WAY RELATED TO OR ARISING FROM THIS AGREEMENT, THE SALE OR USE OF THE EQUIPMENT OR SOFTWARE, OR THE PERFORMANCE OF SERVICES BY MOTOROLA PURSUANT TO THIS AGREEMENT. This limitation of liability provision survives the expiration or termination of the Agreement and applies notwithstanding any contrary provision. No action for contract breach or otherwise relating to the transactions contemplated by this Agreement may be brought more than one (1) year after the accrual of the cause of action, except for money due upon an open account.

Section 15 CONFIDENTIALITY AND PROPRIETARY RIGHTS

15.1. CONFIDENTIAL INFORMATION. During the term of this Agreement, the parties may provide each other with Confidential Information. Each Party will: maintain the confidentiality of the other Party's Confidential Information and not disclose it to any third party, except as authorized by the disclosing Party in writing or as required by a court of competent jurisdiction; restrict disclosure of the Confidential Information to its employees who have a "need to know" and not copy or reproduce the Confidential Information; take necessary and appropriate precautions to guard the confidentiality of the Confidential Information, including informing its employees who handle the Confidential Information that it is confidential and is not to be disclosed to others, but these precautions will be at least the same degree of care that the receiving Party applies to its own confidential information and will not be less than reasonable care; and use the Confidential Information only in furtherance of the performance of this Agreement. Confidential Information is and will at all times remain the property of the disclosing Party, and no grant of any proprietary rights in the Confidential Information is given or intended, including any

express or implied license, other than the limited right of the recipient to use the Confidential Information in the manner and to the extent permitted by this Agreement.

15.2. PRESERVATION OF MOTOROLA'S PROPRIETARY RIGHTS. Motorola, the third party manufacturer of any Equipment, and the copyright owner of any Non-Motorola Software own and retain all of their respective Proprietary Rights in the Equipment and Software, and nothing in this Agreement is intended to restrict their Proprietary Rights. All intellectual property developed, originated, or prepared by Motorola in connection with providing to Customer the Equipment, Software, or related services remain vested exclusively in Motorola, and this Agreement does not grant to Customer any shared development rights of intellectual property. Except as explicitly provided in the Software License Agreement, Motorola does not grant to Customer, either directly or by implication, estoppel, or otherwise, any right, title or interest in Motorola's Proprietary Rights. Customer will not modify, disassemble, peel components, decompile, otherwise reverse engineer or attempt to reverse engineer, derive source code or create derivative works from, adapt, translate, merge with other software, reproduce, distribute, sublicense, sell or export the Software, or permit or encourage any third party to do so. The preceding sentence does not apply to Open Source Software which is governed by the standard license of the copyright owner.

Section 16 GENERAL

16.1. TAXES. The Contract Price does not include any excise, sales, lease, use, property, or other taxes, assessments or duties, all of which will be paid by Customer except as exempt by law. If Motorola is required to pay any of these taxes, Motorola will send an invoice to Customer and Customer will pay to Motorola the amount of the taxes (including any interest and penalties) within thirty (30) days after the date of the invoice. Customer will be solely responsible for reporting the Equipment for personal property tax purposes, and Motorola will be solely responsible for reporting taxes on its income or net worth.

16.2. ASSIGNABILITY AND SUBCONTRACTING. Except as provided herein, neither Party may assign this Agreement or any of its rights or obligations hereunder without the prior written consent of the other Party, which consent will not be unreasonably withheld. Any attempted assignment, delegation, or transfer without the necessary consent will be void. Notwithstanding the foregoing, Motorola may assign this Agreement to any of its affiliates or its right to receive payment without the prior consent of Customer. In addition, in the event Motorola separates one or more of its businesses (each a "Separated Business"), whether by way of a sale, establishment of a joint venture, spin-off or otherwise (each a "Separation Event"), Motorola may, without the prior written consent of the other Party and at no additional cost to Motorola, assign this Agreement such that it will continue to benefit the Separated Business and its affiliates (and Motorola and its affiliates, to the extent applicable) following the Separation Event. Motorola may subcontract any of the work, but subcontracting will not relieve Motorola of its duties under this Agreement.

16.3 WAIVER. Failure or delay by either Party to exercise a right or power under this Agreement will not be a waiver of the right or power. For a waiver of a right or power to be effective, it must be in a writing signed by the waiving Party. An effective waiver of a right or power will not be construed as either a future or continuing waiver of that same right or power, or the waiver of any other right or power.

16.4. SEVERABILITY. If a court of competent jurisdiction renders any part of this Agreement invalid or unenforceable, that part will be severed and the remainder of this Agreement will continue in full force and effect.

16.5. INDEPENDENT CONTRACTORS. Each Party will perform its duties under this Agreement as an independent contractor. The Parties and their personnel will not be considered to be employees or agents of the other Party. Nothing in this Agreement will be interpreted as granting either Party the right or authority to make commitments of any kind for the other. This Agreement will not constitute, create, or be interpreted as a joint venture, partnership or formal business organization of any kind.

16.6. HEADINGS AND SECTION REFERENCES. The section headings in this Agreement are inserted only for convenience and are not to be construed as part of this Agreement or as a limitation of

the scope of the particular section to which the heading refers. This Agreement will be fairly interpreted in accordance with its terms and conditions and not for or against either Party.

16.7. ENTIRE AGREEMENT. This Agreement, including all Exhibits, constitutes the entire agreement of the Parties regarding the subject matter of the Agreement and supersedes all previous agreements, proposals, and understandings, whether written or oral, relating to this subject matter. This Agreement may be executed in multiple counterparts, each of which shall be an original and all of which shall constitute one and the same instrument. A facsimile copy or computer image, such as a PDF or tiff image, or a signature shall be treated as and shall have the same effect as an original signature. In addition, a true and correct facsimile copy or computer image of this Agreement shall be treated as and shall have the same effect as an original signed copy of this document. This Agreement may be amended or modified only by a written instrument signed by authorized representatives of both Parties. The preprinted terms and conditions found on any Customer purchase order, acknowledgment or other form will not be considered an amendment or modification of this Agreement, even if a representative of each Party signs that document.

16.8. NOTICES. Notices required under this Agreement to be given by one Party to the other must be in writing and either personally delivered or sent to the address shown below by certified mail, return receipt requested and postage prepaid (or by a recognized courier service, such as Federal Express, UPS, or DHL), or by facsimile with correct answerback received, and will be effective upon receipt:

Motorola Solutions, Inc.	Customer
Attn: Law Department	Attn: _____
500 W. Monroe Street, 43 rd Floor	_____
Chicago, IL 60661	fax: _____

16.9. COMPLIANCE WITH APPLICABLE LAWS. Each Party will comply with all applicable federal, state, and local laws, regulations and rules concerning the performance of this Agreement or use of the System. Customer will obtain and comply with all Federal Communications Commission ("FCC") licenses and authorizations required for the installation, operation and use of the System before the scheduled installation of the Equipment. Although Motorola might assist Customer in the preparation of its FCC license applications, neither Motorola nor any of its employees is an agent or representative of Customer in FCC or other matters.

16.10. AUTHORITY TO EXECUTE AGREEMENT. Each Party represents that it has obtained all necessary approvals, consents and authorizations to enter into this Agreement and to perform its duties under this Agreement; the person executing this Agreement on its behalf has the authority to do so; upon execution and delivery of this Agreement by the Parties, it is a valid and binding contract, enforceable in accordance with its terms; and the execution, delivery, and performance of this Agreement does not violate any bylaw, charter, regulation, law or any other governing authority of the Party.

16.11. ADMINISTRATOR LEVEL ACCOUNT ACCESS. Motorola will provide Customer with Administrative User Credentials. Customer agrees to only grant Administrative User Credentials to those personnel with the training or experience to correctly use the access. Customer is responsible for protecting Administrative User Credentials from disclosure and maintaining Credential validity by, among other things, updating passwords when required. Customer may be asked to provide valid Administrative User Credentials when in contact with Motorola System support. Customer understands that changes made as the Administrative User can significantly impact the performance of the System. Customer agrees that it will be solely responsible for any negative impact on the System or its users by any such changes. System issues occurring as a result of changes made by an Administrative User may impact Motorola's ability to perform its obligations under the Agreement or its Maintenance and Support Agreement. In such cases, a revision to the appropriate provisions of the Agreement, including the Statement of Work, may be necessary. To the extent Motorola provides assistance to correct any issues caused by or arising out of the use of or failure to maintain Administrative User Credentials, Motorola will be entitled to bill Customer and Customer will pay Motorola on a time and materials basis for resolving the issue.

16.12. SURVIVAL OF TERMS. The following provisions will survive the expiration or termination of this Agreement for any reason: Section 3.6 (Motorola Software); Section 3.7 (Non-Motorola Software); if any payment obligations exist, Sections 5.1 and 5.2 (Contract Price and Invoicing and Payment); Subsection 9.7 (Disclaimer of Implied Warranties); Section 11 (Disputes); Section 14 (Limitation of Liability); and Section 15 (Confidentiality and Proprietary Rights); and all of the General provisions in Section 16.

16.13. NON-APPROPRIATION OF FUNDS. In the event funds are not appropriated and budgeted in any fiscal year for payments due under this Agreement, the Customer shall immediately notify Motorola of such occurrence and this Agreement shall terminate on the last day of the fiscal year for which the appropriation was made without penalty or expense to the Customer of any kind whatsoever. To the extent Motorola has delivered Equipment or performed Services prior to the last day of the fiscal year for which the appropriation was made, Customer shall be liable to pay for such Equipment or Services. It is expressly agreed that Customer shall not activate this non-appropriation provision for its convenience or to circumvent the requirements of this Agreement, but only as an emergency fiscal measure during a substantial fiscal crisis.

The Parties hereby enter into this Agreement as of the Effective Date.

Motorola Solutions, Inc.	**Customer**
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

Exhibit A

SOFTWARE LICENSE AGREEMENT

This Exhibit A Software License Agreement ("Agreement") is between Motorola Solutions, Inc., (“Motorola"), and City of Joplin, Missouri (“Licensee”).

For good and valuable consideration, the parties agree as follows:

Section 1 DEFINITIONS

1.1 “Designated Products” means products provided by Motorola to Licensee with which or for which the Software and Documentation is licensed for use.

1.2 “Documentation” means product and software documentation that specifies technical and performance features and capabilities, and the user, operation and training manuals for the Software (including all physical or electronic media upon which such information is provided).

1.3 “Open Source Software” means software with either freely obtainable source code, license for modification, or permission for free distribution.

1.4 “Open Source Software License” means the terms or conditions under which the Open Source Software is licensed.

1.5 “Primary Agreement” means the agreement to which this exhibit is attached.

1.6 “Security Vulnerability” means a flaw or weakness in system security procedures, design, implementation, or internal controls that could be exercised (accidentally triggered or intentionally exploited) and result in a security breach such that data is compromised, manipulated or stolen or the system damaged.

1.7 “Software” (i) means proprietary software in object code format, and adaptations, translations, de-compilations, disassemblies, emulations, or derivative works of such software; (ii) means any modifications, enhancements, new versions and new releases of the software provided by Motorola; and (iii) may contain one or more items of software owned by a third party supplier. The term "Software" does not include any third party software provided under separate license or third party software not licensable under the terms of this Agreement.

Section 2 SCOPE

Motorola and Licensee enter into this Agreement in connection with Motorola's delivery of certain proprietary Software or products containing embedded or pre-loaded proprietary Software, or both. This Agreement contains the terms and conditions of the license Motorola is providing to Licensee, and Licensee’s use of the Software and Documentation.

Section 3 GRANT OF LICENSE

3.1. Subject to the provisions of this Agreement and the payment of applicable license fees, Motorola grants to Licensee a personal, limited, non-transferable (except as permitted in Section 7) and non-exclusive license under Motorola’s copyrights and Confidential Information (as defined in the Primary Agreement) embodied in the Software to use the Software, in object code form, and the Documentation solely in connection with Licensee's use of the Designated Products. This Agreement does not grant any rights to source code.

3.2. If the Software licensed under this Agreement contains or is derived from Open Source Software, the terms and conditions governing the use of such Open Source Software are in the Open Source

Software Licenses of the copyright owner and not this Agreement. If there is a conflict between the terms and conditions of this Agreement and the terms and conditions of the Open Source Software Licenses governing Licensee's use of the Open Source Software, the terms and conditions of the license grant of the applicable Open Source Software Licenses will take precedence over the license grants in this Agreement. If requested by Licensee, Motorola will use commercially reasonable efforts to: (i) determine whether any Open Source Software is provided under this Agreement; (ii) identify the Open Source Software and provide Licensee a copy of the applicable Open Source Software License (or specify where that license may be found); and, (iii) provide Licensee a copy of the Open Source Software source code, without charge, if it is publicly available (although distribution fees may be applicable).

Section 4 LIMITATIONS ON USE

4.1. Licensee may use the Software only for Licensee's internal business purposes and only in accordance with the Documentation. Any other use of the Software is strictly prohibited. Without limiting the general nature of these restrictions, Licensee will not make the Software available for use by third parties on a "time sharing," "application service provider," or "service bureau" basis or for any other similar commercial rental or sharing arrangement.

4.2. Licensee will not, and will not allow or enable any third party to: (i) reverse engineer, disassemble, peel components, decompile, reprogram or otherwise reduce the Software or any portion to a human perceptible form or otherwise attempt to recreate the source code; (ii) modify, adapt, create derivative works of, or merge the Software; (iii) copy, reproduce, distribute, lend, or lease the Software or Documentation to any third party, grant any sublicense or other rights in the Software or Documentation to any third party, or take any action that would cause the Software or Documentation to be placed in the public domain; (iv) remove, or in any way alter or obscure, any copyright notice or other notice of Motorola's proprietary rights; (v) provide, copy, transmit, disclose, divulge or make the Software or Documentation available to, or permit the use of the Software by any third party or on any machine except as expressly authorized by this Agreement; or (vi) use, or permit the use of, the Software in a manner that would result in the production of a copy of the Software solely by activating a machine containing the Software. Licensee may make one copy of Software to be used solely for archival, back-up, or disaster recovery purposes; *provided* that Licensee may not operate that copy of the Software at the same time as the original Software is being operated. Licensee may make as many copies of the Documentation as it may reasonably require for the internal use of the Software.

4.3. Unless otherwise authorized by Motorola in writing, Licensee will not, and will not enable or allow any third party to: (i) install a licensed copy of the Software on more than one unit of a Designated Product; or (ii) copy onto or transfer Software installed in one unit of a Designated Product onto one other device. Licensee may temporarily transfer Software installed on a Designated Product to another device if the Designated Product is inoperable or malfunctioning, if Licensee provides written notice to Motorola of the temporary transfer and identifies the device on which the Software is transferred. Temporary transfer of the Software to another device must be discontinued when the original Designated Product is returned to operation and the Software must be removed from the other device. Licensee must provide prompt written notice to Motorola at the time temporary transfer is discontinued.

4.4. When using Motorola's Radio Service Software ("RSS"), Licensee must purchase a separate license for each location at which Licensee uses RSS. Licensee's use of RSS at a licensed location does not entitle Licensee to use or access RSS remotely. Licensee may make one copy of RSS for each licensed location. Licensee shall provide Motorola with a list of all locations at which Licensee uses or intends to use RSS upon Motorola's request.

4.5. Licensee will maintain, during the term of this Agreement and for a period of two years thereafter, accurate records relating to this license grant to verify compliance with this Agreement. Motorola or an independent third party ("Auditor") may inspect Licensee's premises, books and records, upon reasonable prior notice to Licensee, during Licensee's normal business hours and subject to Licensee's facility and security regulations. Motorola is responsible for the payment of all expenses and costs of the Auditor. Any information obtained by Motorola and the Auditor will be kept in strict confidence by Motorola and the

Auditor and used solely for the purpose of verifying Licensee's compliance with the terms of this Agreement.

Section 5 OWNERSHIP AND TITLE

Motorola, its licensors, and its suppliers retain all of their proprietary rights in any form in and to the Software and Documentation, including, but not limited to, all rights in patents, patent applications, inventions, copyrights, trademarks, trade secrets, trade names, and other proprietary rights in or relating to the Software and Documentation (including any corrections, bug fixes, enhancements, updates, modifications, adaptations, translations, de-compilations, disassemblies, emulations to or derivative works from the Software or Documentation, whether made by Motorola or another party, or any improvements that result from Motorola's processes or, provision of information services). No rights are granted to Licensee under this Agreement by implication, estoppel or otherwise, except for those rights which are expressly granted to Licensee in this Agreement. All intellectual property developed, originated, or prepared by Motorola in connection with providing the Software, Designated Products, Documentation or related services, remains vested exclusively in Motorola, and Licensee will not have any shared development or other intellectual property rights.

Section 6 LIMITED WARRANTY; DISCLAIMER OF WARRANTY

6.1. The commencement date and the term of the Software warranty will be a period of ninety (90) days from Motorola's shipment of the Software (the "Warranty Period"). If Licensee is not in breach of any of its obligations under this Agreement, Motorola warrants that the unmodified Software, when used properly and in accordance with the Documentation and this Agreement, will be free from a reproducible defect that eliminates the functionality or successful operation of a feature critical to the primary functionality or successful operation of the Software. Whether a defect occurs will be determined by Motorola solely with reference to the Documentation. Motorola does not warrant that Licensee's use of the Software or the Designated Products will be uninterrupted, error-free, completely free of Security Vulnerabilities, or that the Software or the Designated Products will meet Licensee's particular requirements. Motorola makes no representations or warranties with respect to any third party software included in the Software.

6.2 Motorola's sole obligation to Licensee and Licensee's exclusive remedy under this warranty is to use reasonable efforts to remedy any material Software defect covered by this warranty. These efforts will involve either replacing the media or attempting to correct significant, demonstrable program or documentation errors or Security Vulnerabilities. If Motorola cannot correct the defect within a reasonable time, then at Motorola's option, Motorola will replace the defective Software with functionally-equivalent Software, license to Licensee substitute Software which will accomplish the same objective, or terminate the license and refund the Licensee's paid license fee.

6.3. Warranty claims are described in the Primary Agreement.

6.4. The express warranties set forth in this Section 6 are in lieu of, and Motorola disclaims, any and all other warranties (express or implied, oral or written) with respect to the Software or Documentation, including, without limitation, any and all implied warranties of condition, title, non-infringement, merchantability, or fitness for a particular purpose or use by Licensee (whether or not Motorola knows, has reason to know, has been advised, or is otherwise aware of any such purpose or use), whether arising by law, by reason of custom or usage of trade, or by course of dealing. In addition, Motorola disclaims any warranty to any person other than Licensee with respect to the Software or Documentation.

Section 7 TRANSFERS

Licensee will not transfer the Software or Documentation to any third party without Motorola's prior written consent. Motorola's consent may be withheld at its discretion and may be conditioned upon transferee paying all applicable license fees and agreeing to be bound by this Agreement. If the Designated Products are Motorola's radio products and Licensee transfers ownership of the Motorola radio products to a third party, Licensee may assign its right to use the Software (other than RSS and Motorola's

FLASHport® software) which is embedded in or furnished for use with the radio products and the related Documentation; *provided* that Licensee transfers all copies of the Software and Documentation to the transferee, and Licensee and the transferee sign a transfer form to be provided by Motorola upon request, obligating the transferee to be bound by this Agreement.

Section 8 TERM AND TERMINATION

8.1 Licensee's right to use the Software and Documentation will begin when the Primary Agreement is signed by both parties and will continue for the life of the Designated Products with which or for which the Software and Documentation have been provided by Motorola, unless Licensee breaches this Agreement, in which case this Agreement and Licensee's right to use the Software and Documentation may be terminated immediately upon notice by Motorola.

8.2 Within thirty (30) days after termination of this Agreement, Licensee must certify in writing to Motorola that all copies of the Software have been removed or deleted from the Designated Products and that all copies of the Software and Documentation have been returned to Motorola or destroyed by Licensee and are no longer in use by Licensee.

8.3 Licensee acknowledges that Motorola made a considerable investment of resources in the development, marketing, and distribution of the Software and Documentation and that Licensee's breach of this Agreement will result in irreparable harm to Motorola for which monetary damages would be inadequate. If Licensee breaches this Agreement, Motorola may terminate this Agreement and be entitled to all available remedies at law or in equity (including immediate injunctive relief and repossession of all non-embedded Software and associated Documentation unless Licensee is a Federal agency of the United States Government).

Section 9 UNITED STATES GOVERNMENT LICENSING PROVISIONS

This Section applies if Licensee is the United States Government or a United States Government agency. Licensee's use, duplication or disclosure of the Software and Documentation under Motorola's copyrights or trade secret rights is subject to the restrictions set forth in subparagraphs (c)(1) and (2) of the Commercial Computer Software-Restricted Rights clause at FAR 52.227-19 (JUNE 1987), if applicable, unless they are being provided to the Department of Defense. If the Software and Documentation are being provided to the Department of Defense, Licensee's use, duplication, or disclosure of the Software and Documentation is subject to the restricted rights set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013 (OCT 1988), if applicable. The Software and Documentation may or may not include a Restricted Rights notice, or other notice referring to this Agreement. The provisions of this Agreement will continue to apply, but only to the extent that they are consistent with the rights provided to the Licensee under the provisions of the FAR or DFARS mentioned above, as applicable to the particular procuring agency and procurement transaction.

Section 10 CONFIDENTIALITY

Licensee acknowledges that the Software and Documentation contain Motorola's valuable proprietary and Confidential Information and are Motorola's trade secrets, and that the provisions in the Primary Agreement concerning Confidential Information apply.

Section 11 LIMITATION OF LIABILITY

The Limitation of Liability provision is described in the Primary Agreement.

Section 12 NOTICES

Notices are described in the Primary Agreement.

Section 13 GENERAL

13.1. COPYRIGHT NOTICES. The existence of a copyright notice on the Software will not be construed as an admission or presumption of publication of the Software or public disclosure of any trade secrets associated with the Software.

13.2. COMPLIANCE WITH LAWS. Licensee acknowledges that the Software is subject to the laws and regulations of the United States and Licensee will comply with all applicable laws and regulations, including export laws and regulations of the United States. Licensee will not, without the prior authorization of Motorola and the appropriate governmental authority of the United States, in any form export or re-export, sell or resell, ship or reship, or divert, through direct or indirect means, any item or technical data or direct or indirect products sold or otherwise furnished to any person within any territory for which the United States Government or any of its agencies at the time of the action, requires an export license or other governmental approval. Violation of this provision is a material breach of this Agreement.

13.3. ASSIGNMENTS AND SUBCONTRACTING. Motorola may assign its rights or subcontract its obligations under this Agreement, or encumber or sell its rights in any Software, without prior notice to or consent of Licensee.

13.4. GOVERNING LAW. This Agreement is governed by the laws of the United States to the extent that they apply and otherwise by the internal substantive laws of the State to which the Software is shipped if Licensee is a sovereign government entity, or the internal substantive laws of the State of Illinois if Licensee is not a sovereign government entity. The terms of the U.N. Convention on Contracts for the International Sale of Goods do not apply. In the event that the Uniform Computer Information Transaction Act, any version of this Act, or a substantially similar law (collectively "UCITA") becomes applicable to a party's performance under this Agreement, UCITA does not govern any aspect of this Agreement or any license granted under this Agreement, or any of the parties' rights or obligations under this Agreement. The governing law will be that in effect prior to the applicability of UCITA.

13.5. THIRD PARTY BENEFICIARIES. This Agreement is entered into solely for the benefit of Motorola and Licensee. No third party has the right to make any claim or assert any right under this Agreement, and no third party is deemed a beneficiary of this Agreement. Notwithstanding the foregoing, any licensor or supplier of third party software included in the Software will be a direct and intended third party beneficiary of this Agreement.

13.6. SURVIVAL. Sections 4, 5, 6.4, 7, 8, 9, 10, 11 and 13 survive the termination of this Agreement.

13.7. ORDER OF PRECEDENCE. In the event of inconsistencies between this Exhibit and the Primary Agreement, the parties agree that this Exhibit prevails, only with respect to the specific subject matter of this Exhibit, and not the Primary Agreement or any other exhibit as it applies to any other subject matter.

13.8 SECURITY. Motorola uses reasonable means in the design and writing of its own Software and the acquisition of third party Software to limit Security Vulnerabilities. While no software can be guaranteed to be free from Security Vulnerabilities, if a Security Vulnerability is discovered, Motorola will take the steps set forth in Section 6 of this Agreement.

Exhibit B

PAYMENT SCHEDULE

Except for a payment that is due on the Effective Date, Customer will make payments to Motorola within thirty (30) days after the date of each invoice. Customer will make payments when due in the form of a check, cashier's check, or wire transfer drawn on a U.S. financial institution and in accordance with the following milestones.

1. 25% of the Contract Price due upon contract execution;

2. 60% of the Contract Price due upon shipment of equipment;

3. 5% of the Contract Price due upon installation of equipment;

4. 5% of the Contract Price upon system acceptance or start of beneficial use; and

5. 5% of the Contract Price due upon Final Acceptance.

Motorola reserves the right to make partial shipments of equipment and to request payment upon shipment of such equipment. In addition, Motorola reserves the right to invoice for installations or civil work completed on a site-by-site basis, when applicable.

Exhibit C

TECHNICAL AND IMPLEMENTATION DOCUMENTS

Exhibit D

SERVICE STATEMENT(S) OF WORK

Exhibit E

System Acceptance Certificate

Customer Name: _____

Project Name: _____

This System Acceptance Certificate memorializes the occurrence of System Acceptance. Motorola and Customer acknowledge that:

1. The Acceptance Tests set forth in the Acceptance Test Plan have been successfully completed.

2. The System is accepted.

Customer Representative:	Motorola Representative:
Signature: _____	Signature: _____
Print Name: _____	Print Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

FINAL PROJECT ACCEPTANCE:

Motorola has provided and Customer has received all deliverables, and Motorola has performed all other work required for Final Project Acceptance.

Customer Representative:	Motorola Representative:
Signature: _____	Signature: _____
Print Name: _____	Print Name: _____
Title: _____	Title: _____
Date: _____	Date: _____