P25 Feature Compliance

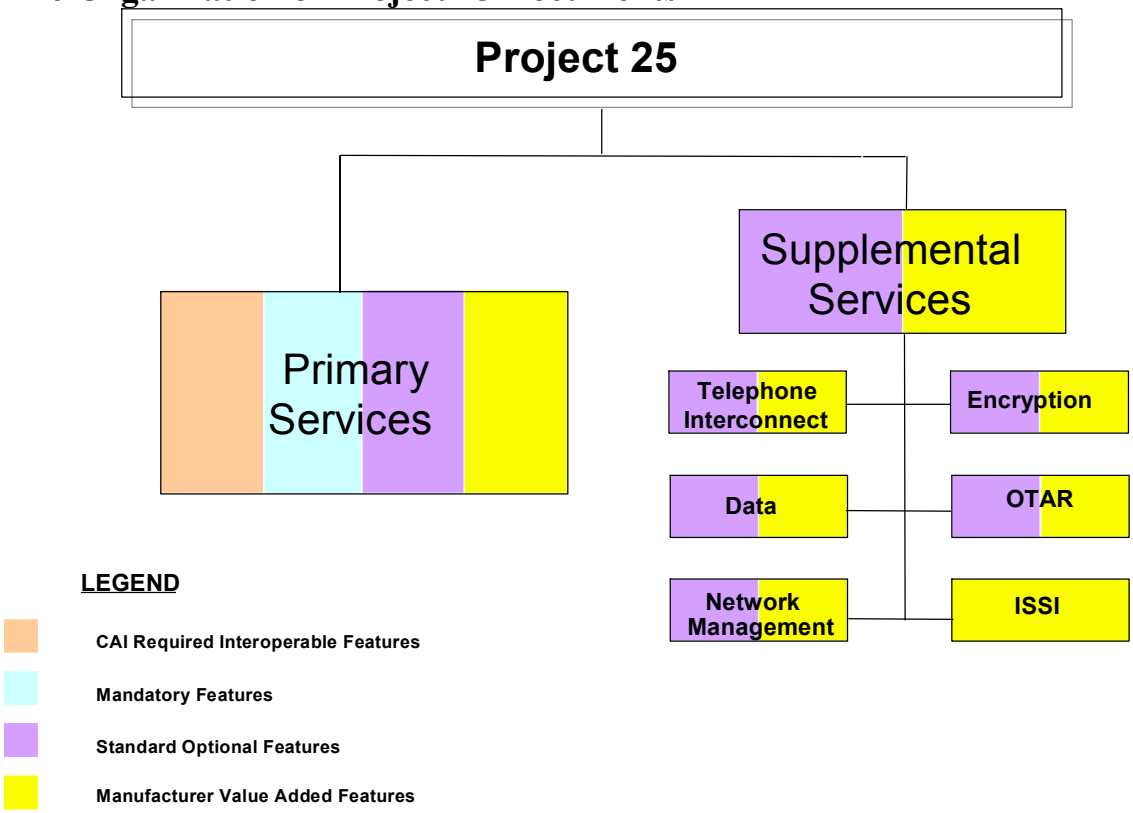
Project 25 is a team of users who have taken the initiative to develop digital radio standards for Public Safety. Project 25 is a joint development effort of the Association of Public Safety Communications Officials (APCO), International APCO, the National Association of State Telecommunications Directors (NASTD), and the U.S. Federal Government supported by the Telecommunications Industry Association (TIA). The result of this effort is architecture for advanced land mobile radio solutions.

Project 25 is a User-driven standard which includes documents that specify the formats, interfaces and protocols required to create a Project 25 system. These advanced systems retain the flexibility requested by users by including optional and enhanced features, and by allowing manufacturers to build upon the standard with value-added features.

The following information is intended to help Onondaga County understand Project 25 standards. A list of the related documents applicable to our offering is provided in the Appendix at the end of this document.

Customers are encouraged to contact the Project 25 committee directly in regards to manufacturers taking part in Project 25 designed equipment and feature sets. Motorola is one of numerous manufacturers taking part in the standard.

The Organization of Project 25 Documents



Project 25 is made up of over 30 documents, which describe requirements for both Mandatory and Optional services offered by Project 25. The Project 25 portfolio has been categorized into two major buckets - Primary Services and Supplemental Services.

The Primary Services are all the attributes inherent in a Project 25 system. In order to be Project 25 compliant, all systems must comply with the Mandatory requirements. The manufacturer may select Standard Optional services and if they claim compliancy they must comply with the specifications as defined by the standard. There are also mandatory and standard optional features under the Standard Optional Services. In addition, manufacturers may offer value-added features, which are not defined by the standard and are specifically defined by that manufacturer.

The Supplemental Services are additional services offered by Project 25. These services are also divided into Standard optional and manufacturer value-added features. A manufacturer may decide to offer any combination or none of the Supplemental Services.

In order to provide Project 25 Multi-source Voice Subscribers, a system must provide at a minimum the following Primary Services...

Project 25 CAI

Project 25 Mandatory Conventional/Trunking Features

Motorola's ASTRO 25 Rollout

The following information (defined in the tables below) specifically refers to Motorola's ASTRO 25 Systems offering designed to definitions and descriptions in Project 25 Phase 1 documents September 2007. This is a listing of Motorola's Project 25 mandatory and standard optional features and a subset of Motorola's value added proprietary features of which customers may choose to purchase. Because some of the features identified below are still under development, any non-mandatory offering may be subject to change.

Motorola's ASTRO 25 transceiver equipment is designed to the Project 25 equipment and performance standards listed in Transceiver Performance Recommendations-ANSI/TIA102CAAB and Transceiver Measurements and Methods-ANSI/TIA102CAAA.

Common Air Interface

Common Air Interface (CAI) Mandatory Services

Feature Summary	*Project 25 References*
IMBE Vocoder Description	ANSI/TIA102BABA
IMBE Vocoder Conformance	ANSI/TIA102BABB-A
12.5 kHz Channel Bandwidth	TSB102-A, ANSI102BAAA-1
FDMA	ANSI/TIA102BAAA-1
QPSK-C – C4FM	ANSI/TIA102BAAA-1

Mandatory Trunking Services

Mandatory Trunking Features

The following features are referenced in these Project 25 Standard Documents:
TSB102-A, TSB102AABA, ANSI/EIA/TIA102AABB, ANSI/EIA/TIA102AABC-1, 2

Feature Summary
Broadcast Voice Call
Group Voice Call
Individual Voice Call
Registration

Roaming
Analog Mutual Aid (Subscriber Feature)

Standard Optional Services

Standard Optional Trunking Features

The following features are referenced in these Project 25 Standard Documents:
TSB102-A, TSB102AABA, ANSI/EIA/TIA102AABB, ANSI/EIA/TIA102AABC-1, 2

Feature Summary
Priority Call
Call Interrupt
Discreet Listening
Silent Emergency
Talking Party Identification
Call Alerting
Call Restriction
Affiliation
Call Routing

Mandatory Conventional Services

Mandatory Conventional Features

Feature Summary	*Project 25 References*
Unaddressed Voice Call	TSB102-A
Analog Mutual Aid (Subscriber Feature)	TSB102-A

Standard Optional Services

Standard Optional Conventional Features

Feature Summary	*Project 25 References*
Group Voice Call	TSB102-A
Individual Voice Call	TSB102-A
Call Interrupt	TSB102-A
Discreet Listening	TSB102-A
Silent Emergency	TSB102-A
Radio Unit Monitoring Remote Monitor	TSB102-A
Talking Party Identification	TSB102-A
Call Alerting	TSB102-A
Radio Unit Disable/re-enable	TSB102-A

Motorola Value Added

Motorola Value Added Conventional Features

Feature Summary
Encrypted Remote Inhibit/Enable

Supplemental Services

Encryption Features

Feature Summary	*Project 25 References*
DES-OFB, AES encryption of CAI voice	ANSI/TIA102AAAD, AAAA, AAAB
DES-OFB, AES encryption of CAI data (Conventional only)	ANSI/TIA102AAAD, AAAA, AAAB

Motorola Value Added

Motorola Value Added Encryption Features

Multiple encryption key
Volatile (tamper protected) key storage
Key Erase
Proprietary encryption algorithms (DES-XL, DVI-XL, DVP-XL)
Multiple algorithm support (Combinations of supported algorithms)
Backwards compatibility with Motorola Securenet & Advanced Securenet capabilities
FIPS-140-2 Level 1 certification of cryptographic modules
Handheld rekeying via KVL3000 Plus

Supplemental Services

Conventional/Trunked OTAR (Over The Air Rekeying)

The following features are referenced in these Project 25 Standard Documents ANSI/TIA102.AACA-1-2, ANSI/TIA102AACB, ANSI/TIA102AACC, ANSI/TIA102AAAD

Mandatory Feature Summary
Change Radio Set Identifier
Keyset Change-Over & Keyset Name
Delete Key (Subscriber only)
Modify Key
Negative Acknowledgment
Clear/Encrypted Rekey Request from subscriber
Warm Start
Zeroize

Delayed Acknowledgment (Conventional only)
Clear/Encrypted Hello (Radio check, Rekey Request)
Registration (Trunking only)
Unable to Decrypt (Trunking only)
Rekey
DES-OFB, AES encryption algorithm
No Service

Supplemental Services

Conventional/Trunked OTAR (Over The Air Rekeying)

The following features are referenced in these Project 25 Standard Documents ANSI/TIA102.AACA, ANSI/TIA102AACB, ANSI/TIA102AACC

Optional Feature Summary

Delete Keyset (Subscriber Only)
Inventory Radio Set Identifier
Inventory All Modes (Subscriber Only)
Modify Keyset Attributes

Motorola Value Added

Motorola Value Added OTAR Features

Feature Summary

Unique Capabilities of the Motorola Key Management Facility *
Unit Update*
Retry Opportunities*
Centralized, “Currency” based key management*
Secure Remote Inhibit/Enable
"Store & Forward" Rekeying with KVL3000 Plus
KLK (Key Loss Key) rekeying
Proprietary encryption algorithms (DES-XL, DVI-XL, DVP-XL)
Multiple algorithm support (choose combinations of supported algorithms)

Supplemental Services

Key Fill Device Interface Protocol

The following features are referenced in the Project 25 Standard Document TIA102AACD

Manual Rekey Mandatory Feature Summary
Key load
Key Erase
Erase All Keys
View Key Information

Manual Rekey Optional Feature Summary
View Individual Radio Set Identifier (RSI)
Load Individual RSI
View KMF RSI
Load KMF RSI
View Message Number Period
Load Message Number Period
View Keyset Info
Activate Keyset

Supplemental Services

Data Features

Feature Summary	*Project 25 References*
Radio to FNE Mode of Operation Packet Data	ANSI/TIA102BAEA, BAEB-1,2
CAI Conformance to "Um" Packet Interface	ANSI/TIA102BAEA, BAEB-1,2
MRC to MDP Interface "A"	ANSI/TIA102BAEA, BAEB-1,2
RFG to Host Interface "Ed"	ANSI/TIA102BAEA, BAEB-1,2
Individual IP Bearer Service Support (Packet Switched Data)	ANSI/TIA102BAEA, BAEB-1,2
SNDCP Support–Auto Data Regis&Roaming (Trunking Only)	ANSI/TIA102BAEA, BAEB-1,2
DES-OFB encryption of CAI data (Conventional only)	ANSI/TIA102AAAD
System Support For Multikey (Conventional only)	ANSI/TIA102AAAD

Motorola Value Added

Motorola Value Added Data Features

Feature Summary
System Support for Multialgorithm (Conventional Only)
Transmitter Steered Data for Data Voting over Voice Simulcast RF Topology
Radio Finder for TX Steered Data
Out Bound Individual IP to Group CAI Data Service (Conventional Only)
RNC & ASTRO Mobile Federal Information Protection Security 140-1 Level 1 Compliance (Conventional only)
Automatic Data Registration for non-SNDCP Data (Conventional Only)
Manual Automatic Data Roaming (Conventional Only)
Enhanced Radio Scan (Conventional Only)

Supplemental Services

Telephone Interconnect

Mandatory Feature Summary ***Project 25 References***

The following features are referenced in these Project 25 Standard Documents ANSI/TIA102BADA and ANSI/TIA102AABC.

Table A.1 lists the following Mandatory abilities/features for Trunked Subscribers:

- Send Telephone Interconnect Request using Buffered Mode Dialing
- Accept and Act on Telephone Interconnect Voice Channel Grant
- Accept and Act on Deny Response from RF Subsystem
- Accept and Act on Queued Response from RF Subsystem
- Send Cancel Service Request

Table A.2 lists the following Mandatory abilities/features for the Trunked RF Subsystem:

- Accept and act on Telephone Interconnect Request – Explicit Dialing
- Send Telephone Interconnect Voice Channel Grant
- Send Deny Response of Queued Response (when applicable)
- Accept and Act on Cancel Service Request

Supplemental Services

Telephone Interconnect

Optional Feature Summary ***Project 25 Reference***

The following features are referenced in these Project 25 Standard Documents ANSI/TIA102BADA and ANSI/TIA102AABC.

Telephone Interconnect equipped Trunked Subscriber Standard Options, listed in Table A.1.

- Accept and act on Telephone Interconnect Answer Request
- Send Telephone Interconnect Answer Response
- Send 34 Digit Dialed Number Buffer

Telephone Interconnect equipped Trunked Infrastructure Standard Options, listed in Table A.2.

- Per Subscriber Enabling of Class of Service
- Restrict Toll Calls
- Incoming Only (NOTE: Implemented in Subscriber)
- Send Telephone Interconnect Answer Request
- 2-Wire Loop Start Interface at Et Point
- 2-Wire Ground Start Interface at Et Point
- Generate Overdial Outbound

Motorola Value Added

Motorola Value Added Telephone Interconnect

Feature Summary

DID and Telephone Call Timeout Timer and (Land to Mobile) Inbound Overdial.

Motorola Telephone Interconnect equipped Trunked Infrastructure:

- Full duplex audio routing
- Intra System Roaming during Telephone Interconnect
- Groundstart and DID via channelized T1 Interface
- Mobile to Land Call Initiation Across Zones
- Comprehensive Voice Announcements for Rejecting Land to Mobile Calls

Appendix: Project 25 Document Numbers & Ordering Information

Primary Services	Document Number
Project 25 System & Standard Definition	TSB102-A
Common Air Interface (CAI)	ANSI/TIA102BAAA-A
Vocoder Mean Opinion Score (MOS) Test	ANSI/TIA102BABB
Vocoder Description	ANSI/TIA102BABA

Supplemental Services	Document Number
Trunking	
Trunking Overview	TIA102AABA-A
Trunking Control Channel Formats	ANSI/TIA102AABB-A
Trunking Control Channel Messages	ANSI/TIA102AABC-B1,B2
Encryption	
Security Services Overview	ANSI/TIA102.AAAB-A
Block Encryption Protocol	ANSI/TIA102AAAD
DES Encryption Conformance	ANSI/TIA102AAAC
OTAR (Over-the-Air-Rekeying)	
OTAR Protocol	ANSI/TIA102AACA-A1
OTAR Operational Description	ANSI/TIA102AACB
OTAR Conformance	ANSI/TIA102AACC-A
Key Fill Device Interface Protocol	
Key Fill Device Interface Protocol	TIA102AACD
DATA	
Data Overview	ANSI/TIA102BAEA-A
Packet Data Specification	ANSI/TIA102BAEB-A
Telephone	
Telephone Interconnect Requirements and Definitions	ANSI/TIA102BADA-A1

ORDERING INFORMATION:

Commercial and private entities may access the Project 25 technical documents through:

Global Engineering Documents/IHS
15 Inverness Way East
Englewood, CO 80112
Phone: 1-877-413-5184
Website: http://global.ihs.com/