



# 700 MHz Deployable Public Safety Trunking Systems

APCO American National Standard 2.108.1-2026

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# FOREWORD\*

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# EXECUTIVE SUMMARY\*

*This Standard provides information to support the configuration and use of deployable trunked radio systems in the 700 MHz Public Safety frequency band. Recognizing that nationwide interoperability is a key objective in the deployment of these systems, this Standard provides the information necessary to allow system operators and administrators to configure these deployable systems in a consistent and predictable manner. The Standard also provides the information necessary to allow radio technicians to consistently configure subscriber radios to properly operate on these systems.*

*Chapter 2 provides information related to the specific spectrum resources available for use in deployable trunked systems in this band. It also provides the technical information needed for proper configuration and programming of the deployable trunked system infrastructure and subscriber radios to provide effective use of these systems.*

*Chapter 3 provides information related to the operational and deployment characteristics that need to be considered as the deployment of these systems is planned and executed.*

*The Appendices provide additional background and technical information to assist in understanding the history of how the spectrum for these deployable systems came into existence, and how to deploy systems in close proximity to one another when two or more deployable systems are needed for uniquely large or complex incidents.*

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## Chapter One

# INTRODUCTION

### Scope

*When major incidents or planned events occur, public safety agencies are often in need of additional communications capacity or coverage to meet their overall communications needs. Through the combined efforts by the National Regional Planning Council (NRPC) and the National Public Safety Telecommunications Council (NPSTC), the FCC designated six (6) 700 MHz Public Safety channels that can be used on a nationwide basis for the deployment of transportable trunked radio systems to help fill this need.*

### Purpose

The purpose of this Standard is to provide a body of technical and operational information to allow system administrators to configure and deploy these systems in a consistent manner so that routine operations and interoperable communications work as expected. The Standard also provides the information necessary to allow radio technicians to consistently configure subscriber radios to properly operate on these systems.

## Chapter Two

# Establishment of Spectrum and Infrastructure Standards for Stand-Alone Deployable Solutions

### Scope

*This Chapter provides information on the selection and designation of specific 700 MHz spectrum that is authorized for nationwide use in deployable trunked radio systems.*

### 2.1 FCC History and Channel Identification

In 2008, the National Public Safety Telecommunications Council (NPSTC) petitioned the Federal Communications Commission (FCC) to adopt rules that would support the nationwide utilization of deployable trunked radio systems.<sup>1</sup> In its petition, NPSTC proposed that all of the 24 Reserve Channels in the 700 MHz band be designated for temporary deployable mobile trunked infrastructure that could be transported to an incident area to assist with emergency response and recovery. NPSTC asserted that such designation would allow 700 MHz licensees to pre-program these channels into their subscriber radios, eliminating the need to reprogram radios in the field or distribute cached radios during a disaster.

On October 24, 2014, the FCC issued a Report and Order that released 24 narrowband reserve channels to the General Use category under the administration of the 700 MHz Regional Planning Committees (RPCs). The decision set aside up to eight (8) 12.5 kHz from the 24 channels in the 700 MHz reserve spectrum outside of the T-Band areas<sup>2</sup> to support these deployable systems.<sup>3</sup> In the T-Band markets, the FCC stated in 90.531 of the rules that all 24 reserve channels will be available for General use with priority given to relocating T-Band incumbents that commit to return an equal amount of T-Band channels, for a five year period. The reservation of 700 MHz reserve channels for T-Band incumbents has expired.<sup>4</sup> Also the T-Band auction and relocation mandate was repealed on December 27, 2020.

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<sup>1</sup> NPSTC Petition for Rulemaking, submitted February 8, 2008.

<sup>2</sup> Part of the UHF television broadcast spectrum from **470-512 MHz** (TV channels 14-20) in the United States is referred to as the UHF-T Band when used for private land mobile radio in certain metropolitan areas.

<sup>3</sup> Report and Order, FCC 14-175, released October 24, 2014.

<sup>4</sup> The Report and Order at paragraph 40 stated that the five-year period was to start upon Public Safety and Homeland Security Bureau issuance of a Public Notice announcing the availability of the reserve channels for licensing. On April 23, 2015, the Public Safety and Homeland Security Bureau issued a Public Notice which approved specific channels for deployable trunked systems. That Public Notice stated that RPCs could incorporate the channels into their plans, with the caveat of priority for T-Band incumbents relocating from the T-Band. Five years from issuance of this Public Notice would be April 23, 2020. Therefore, the T-Band priority for the reserve channels has expired.

The FCC encouraged the NRPC and NPSTC to identify specific Reserve Channels to support deployable trunked systems on a nationwide basis. Those channels could then be incorporated into regional plans within 3 months from the publication of the 700 MHz Report and Order in the Federal Register. In response to the FCC decision, NPSTC established a joint Task Group with the NRPC to identify these channels and to develop a set of recommended operational strategies that would allow these channels and deployable trunked systems to be used to the fullest extent possible. NPSTC and the NRPC also studied a series of other challenges which would need to be addressed, including the requirement to standardize System IDs and provide for the management of Subscriber IDs.

On February 13, 2015, NPSTC and the NRPC filed a joint letter with the FCC recommending the designation of six channels for nationwide operation of deployable trunked radio systems. This letter also requested an extension of the deadline for the adoption of these channels into regional plans. In selecting the channels for recommendation to the FCC, NPSTC and the NRPC reviewed several sets of channels to determine the best channel spacing (to minimize interference) and to provide coverage at the U.S./Canada and US/Mexico border. Only six channels were found to be the most appropriate for assignment to a nationwide channel plan. NPSTC and the NRPC recognized that individual RPCs could add additional channels to this group to create a full complement of frequencies. The U.S./Canada Sharing Sector 2 was the most problematic. Only four of the six channels are available for use by U.S. licensees in this region which impacts areas above Line A in the states of Pennsylvania, New York, and Vermont.<sup>5</sup>

On March 3, 2015, the FCC published a Public Notice seeking comments on the NPSTC/NRPC channel proposal.<sup>6</sup> On April 23, 2015, the FCC approved the six proposed channels.<sup>7</sup> In taking this action, the FCC stated “RPCs may now incorporate these channels into their plans for deployable trunked systems provided any region with a T-Band market must give priority to these channels, in that market, to any public safety T-Band incumbent seeking to relocate from the T-Band.”

In a related action on April 20, 2015, the FCC also extended the date by which amended regional plans must be filed with the Commission to October 30, 2015, to include channels for deployable trunked systems.<sup>8</sup> In that decision, FCC treated an NRPC request for an extension as a waiver request and granted a portion of the additional time NRPC requested.

NPSTC and the NRPC issued a Report on October 16, 2015 titled “700 MHz Nationwide Deployable Trunked Solutions”. This Report was then Revised October 6, 2020. A copy of this report is available at the link identified in the footnote below.<sup>9</sup>

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<sup>5</sup> Line A defines the southern-most border of a zone within which the U.S. and Canada divide spectrum between the two countries based on treaties and specific spectrum agreements.

<sup>6</sup> Public Notice, DA 15-278, PS Docket No. 13-87 and WT Docket No. 02-378, released March 3, 2015.

<sup>7</sup> Public Notice, DA 15-483, PS Docket No. 13-87 and WT Docket No. 02-387, released April 23, 2015.

<sup>8</sup> Order, DA 15-476, PS Docket No. 13-87, released April 20, 2015.

<sup>9</sup> [https://www.nrpc.us/documents/NPSTC\\_NRPC\\_700\\_MHz\\_Nationwide\\_Deployable\\_Trunked\\_Solutions\\_with\\_2020\\_revisions\\_FINAL\\_2020.10.06.pdf](https://www.nrpc.us/documents/NPSTC_NRPC_700_MHz_Nationwide_Deployable_Trunked_Solutions_with_2020_revisions_FINAL_2020.10.06.pdf)

Table 1 (below) shows the set of six channels that NPSTC and the NRPC recommended for nationwide use. These channels were approved by the FCC. In this table CC-P is used to designate the Primary Control Channel and CC-A is used to designate the Alternate Control Channel.

| <b>Table -1 NPSTC/NRPC Recommended and FCC Approved Channel Allocation for Deployable 700 MHz Trunked Systems</b> |                     |                           |                       |
|-------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------|-----------------------|
| 700 MHz Channel #                                                                                                 | FCC Channel Numbers | 12.5 kHz Center Frequency | Channel Spacing (kHz) |
| 1                                                                                                                 | 37-38               | 769.23125                 | N/A                   |
| 2                                                                                                                 | 61-62               | 769.38125                 | 150                   |
| 3                                                                                                                 | 117-118             | 769.73125                 | 350                   |
| 4                                                                                                                 | 141-142             | 769.88125                 | 150                   |
| 5                                                                                                                 | 883-884             | 774.51875 CC-P            | 4500                  |
| 6                                                                                                                 | 939-940             | 774.86875 CC-A            | 350                   |

*Table 1- FCC Approved Channels for Interoperability/Deployable Trunked Radio System*

Table 2 (below) shows the geographic and border availability of channels near the borders with Mexico and Canada.

| <b>Table 2 - NPSTC/NRPC Recommended Border Area Channel Selections</b> |                                         |                     |                 |                 |
|------------------------------------------------------------------------|-----------------------------------------|---------------------|-----------------|-----------------|
|                                                                        | Common channel selections for each area |                     |                 |                 |
| Channels                                                               | Mexico Border Zone                      | Canada Sharing Zone | Canada Sector 1 | Canada Sector 2 |
| 37-38                                                                  | Y                                       | Y                   | Y               | Y               |
| 61-62                                                                  | Y                                       | Y                   | Y               | Y               |
| 117-118                                                                | Y                                       | Y                   | Y               | N               |
| 141-142                                                                | Y                                       | Y                   | Y               | N               |
| 883-884                                                                | Y                                       | Y                   | Y               | Y               |
| 939-940                                                                | Y                                       | Y                   | Y               | Y               |
| Total Usable                                                           | 6                                       | 6                   | 6               | 4               |

*Table 2 - NPSTC/NRPC Recommended Border Area Channel Selections*

## 2.2 Licensing and Spectrum Management Strategies for Deployable Systems

Regional Plans must adopt and allocate the designated six deployable channels for trunked deployable use. In compliance with FCC rule [90.531(2)(ii)<sup>10</sup>], regions may allocate up to two (2) additional Reserve channels for trunked deployable use, but those will only be valid for the region. Regions should include this standard as part of their regional plan. If a region decides to allocate additional channels for deployable use, the region shall also specify that the additional channels shall not be used as control channels, as any units from out of the region would not be programmed for those additional control channels.

Each agency that wants to build and deploy a deployable system shall license the system as an FB2T (agencies may also additionally want to license as FBT if connecting to a fixed control point). The area of operation should be at least statewide. States with multiple FCC planning regions such as Regions 5 & 6 that make up California should license for statewide area of operation. Where multiple states constitute an integrated

<sup>10</sup> FCC Rule 90.531(2)(ii) – as amended by FCC Report and Order FCC 14-172 released October 24, 2014 *Deployable Trunked Systems. Outside the urban areas specified in Sections 90.303 and 90.305 of the Commission's rules, the 700 MHz Regional Planning Committees may designate no more than eight 12.5 kilohertz channel pairs for temporary deployable mobile trunked infrastructure (F2BT) that could be transported into an incident area to assist with emergency response and recovery.*

interoperability area, the licensee should license statewide for each state that is part of the interoperability area. An example of this is the National Capital Region.

## 2.3 700 MHz Deployable Trunked Radio System Infrastructure Standards

Once the channels were allocated by the FCC for nationwide use, NPSTC and the NRPC sought to develop technical and operational solutions that would be required to implement deployable trunked radio networks. While only six channels were identified by NPSTC and the NRPC and subsequently approved by the FCC, public safety agencies can add additional channels through coordination with their respective RPC. It is important to note that when adding additional channels to a local system beyond the six specifically designated nationwide for deployable trunked use, control channels must be selected from the nationwide channel set, specifically channel numbers 5 and 6 in Table 1 designated for control channel use. This is necessary to support interoperability of subscriber devices to all designated deployable systems.

NPSTC and the NRPC, with assistance from TIA, reviewed a number of logistical and technical issues. These included two major components, management of System IDs and management of Subscriber IDs. There were many factors to consider, including the total number of Subscriber IDs that can be supported per System ID, how Project 25 (P25) devices in a deployable network can connect to other systems, and to what extent manual reprogramming of radios might occur.

### 2.3.1 Single vs. Multiple System IDs

Early discussion in the Task Group centered on the simplicity of assigning a single System ID for all deployable trunked systems that were designed to be fully interoperable. However, an incorrect assumption was made that only 128,000 subscriber IDs can be supported per System ID.<sup>11</sup> If a subset of Subscriber IDs were assigned to each state in the U.S. it would provide only about 2,560 IDs for each state. Such a limited number of IDs would not allow for broad adoption of the program throughout the state and would greatly limit the number of radios that could participate. Because of this incorrect assumption, the single nationwide system ID approach was rejected in favor of assigning individual system IDs to each agency request.

Over time in discussions with equipment manufacture representatives familiar with the TIA standard it was found that the individual subscriber limit is only for a single trunked system total and can be made up of any combination of subscriber ID numbers. Further, it was assumed that roaming could be used for out of area units responding to an incident. This assumption was determined to not be accurate, and was detrimental to interoperability.

### 2.3.2 Common WACN, System ID, and NAC

The NRPC worked with TIA to be assigned a WACN ID of BF7CC HEX. NRPC then worked with the manufacturers to designate system ID 101 HEX as the common system ID nationwide. Agencies can use a

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<sup>11</sup> The 128,000 subscriber ID limit is not an inherent limitation of the P25 standard, but it is the maximum number supported in some equipment.

different system ID for strictly local operations if needed, but to ensure nationwide interoperability the nationwide system ID of 101 HEX and \$101 NAC shall be used. Users of other IDs should transition to 101 HEX and \$101 NAC at their earliest opportunity.

## 2.4 Subscriber Programming Standards

### 2.4.1 System Key Management

As stated in Section 2.3, NRPC was granted the WACN ID BF7CC (HEX) by TIA. NRPC selected System ID 101 (HEX) as the common system ID nationwide and \$101 as the common System NAC. NRPC administers the WACN/System Keys for this use. Any Public Safety Agency may use the keys for programming their infrastructure and mobile equipment.

Agencies desiring to obtain System Keys should go to APCO's Interoperability Resources web page <https://www.apcointl.org/technology/interoperability/interoperability-resources/> for information.

### 2.4.2 Encryption and Encryption Key Management

Deployable trunked system deployments may include the operational need for encrypted talkgroups. Encryption adds additional security to mission-critical voice and data communications when operational needs require it but can introduce complexities to interoperability. Land mobile radio encryption keys are comprised of four components; Storage Location Number (SLN) also referred to as Common Key Reference (CKR), Key ID, Key Algorithm, and Key String. It is essential that encryption is coordinated to maintain security and interoperability.

Deployable trunked systems shall not utilize 'proprietary' encryption.

Deployable trunked systems shall utilize the Advanced Encryption Standard (AES) – 256 algorithm as specified in the TIA P25 standards (TIA-102.AAAD).

Deployable trunked systems shall utilize the National Interoperability SLN Twelve (12) as the common encryption key. This key is maintained and issued by the National Law Enforcement Communications Center (NLECC). To maintain interoperability, all agencies utilizing encryption must have subscriber radios programed and filled with the correct encryption key.

Agencies desiring to obtain Encryption Key information should go to APCO's Interoperability Resources web page <https://www.apcointl.org/technology/interoperability/interoperability-resources/>.

Deployable trunked systems utilizing encryption shall implement subscriber programming with the identified encryption key information in the deployable trunked Zone "YY" talkgroups.

For more detailed information regarding encryption and encryption key management reference P25 TIA-102.AAAD, NIST SP-800-57, and encryption publications issued by the Cybersecurity & Infrastructure Security Agency.

### 2.4.3 Channel ID Plan

Different radio manufacturers utilize different processes to select the actual RF channels against a reference frequency in the firmware of the radio. This is referred to as the Channel ID Plan. To ensure interoperability, all 700 MHz deployable trunked radio systems and subscriber radios need to utilize a common Channel ID Plan. The specific Channel ID Plan to be used shall conform with this Standard and can be obtained at APCO's Interoperability Resources web page:

<https://www.apcointl.org/technology/interoperability/interoperability-resources/>.

### 2.4.4 FDMA Deployments

The basic modulation protocol for deployable trunking is frequency division multiple access (FDMA) digital technology, also known as Project 25 Phase 1. This modulation scheme meets the requirement of the Federal Communications Commission mandating the use of digital technology in the 700 MHz public safety frequency band<sup>12</sup> and was adopted in the Project 25 standards development process. In a standard six-frequency deployable trunking configuration, FDMA supports one (1) control channel and five (5) simultaneous talk paths. To ensure nationwide interoperability, every deployable trunked radio system shall support FDMA.

### 2.4.5 TDMA Deployments

When establishing modulation protocols for digital land mobile radio systems, Project 25 adopted a more robust standard using time division multiple access (TDMA) technology, also known as Project 25 Phase II. TDMA employs an advanced vocoder to permit two (2) simultaneous talk paths to operate on one (1) standard 12.5 kHz frequency, effectively doubling capacity. In a standard six-frequency deployable trunking configuration, TDMA supports one (1) control channel and ten (10) simultaneous talk paths. Deployable trunked radio systems may use TDMA technology to increase capacity if systems are configured to automatically revert to FDMA. Failure to configure systems to automatically (without operator intervention) revert from TDMA to FDMA impedes nationwide interoperability when a first responder radio is not configured to support both protocols.

To maximize resources, it is encouraged that all agencies procuring a Deployable Trunked System (DTS) specify that the equipment hardware and software is capable of TDMA operation. The capability to operate "dynamically" between FDMA and TDMA operation is imperative. To ensure interoperability, TDMA only operation shall not be used.

### 2.4.6 Infrastructure RF Output Power Limits

The base station infrastructure for Deployable Trunked Systems should be configured with the lowest possible effective radiated power (ERP) to meet the coverage and reliability needed for the specific incident(s) requiring the system deployment. Deployable systems shall not exceed 100 watts ERP unless specifically authorized by the home RPC at the time of licensing. For deployable systems that will provide

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<sup>12</sup> See 47 CFR § 90.535(a)

coverage into more than a single RPC, concurrence from all affected RPCs is needed if the ERP needs to exceed 100 watts ERP.

#### **2.4.7 Subscriber Power Limits**

The FCC has established transmit power levels for mobile, portable and control stations operating in the 769-775 MHz and 799-805 MHz frequency bands, which are listed in effective radiated power (ERP). The transmitting power of a control station must not exceed 200 watts ERP, a mobile unit must not exceed 100 watts ERP and a portable (hand-held) unit must not exceed 3 watts ERP.<sup>13</sup> Though the values expressed are the maximum allowed transmitting power, the Regions have established power levels in their plans that allow for frequency reuse within the Region. It is recommended that actual transmitting power (ERP) be set to a value that provides the needed communications coverage. This value may be considerably lower than the maximum FCC allowed power.

#### **2.4.8 Standardized Subscriber Templates**

NPSTC and the NRPC Support Office created a set of trunked talkgroups to support interoperable systems. This provides the final element to a standardized implementation and should increase operational efficiency at the scene of a major incident.

It is recommended that at least one zone (and preferably two zones) of 16 talkgroups be allocated in subscriber equipment. Each zone would be designated by an alpha character at the end of the alphabet ("ZZ," "YY"). This would minimize confusion over local agency assigned zone letters. Each zone will include the following standardized talkgroup names. Tactical talkgroup names were designed to correspond with the channel position in the radio (Tactical talkgroup "ZZ3" is in channel position #3). Agencies that can support encrypted operation are encouraged to use the "YY zone.

The "EMER ZZ" and "EMER YY" EMERGENCY talkgroups are intended to provide a talk path resource for users needing to verbally call for assistance. They are placed in mode selector position 16 to allow the user to rotate the selector fully to the hard stop to make a call for assistance.

It is highly recommended that competent technical personnel (for example a COMT or COML) be involved in the planning and deployment of any 700 MHz deployable trunked system. The talkgroups become a communications resource that must be managed. The technical personnel should designate what functions would take place on each talkgroup. Talkgroup names are designed to provide the most flexibility. The technical personnel must be aware of the possibility of duplicate unit IDs with this usage. Technical personnel should request programming resources to mitigate this problem if found.

It is recognized that there is no nationwide designated authority to mandate the use of talkgroup names, just as there is no mandate to use standardized names for nationwide interoperability channels. However,

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<sup>13</sup> 47 CFR 90.541

with the use of these naming practices, local agencies will see the benefit from adopting a standardized approach.

### 2.4.7.1 Unencrypted Communications

| Zone "ZZ" for Unencrypted Communications |                       |                 |                              |
|------------------------------------------|-----------------------|-----------------|------------------------------|
| Knob Position                            | Talk Group Decimal ID | Displayed TG ID | Usage                        |
| 1                                        | 101                   | CALL ZZ         | Calling / Initial Contact TG |
| 2                                        | 102                   | CMD ZZ          | Pre-designated Command TG    |
| 3                                        | 103                   | TAC ZZ3         | General / Tactical use TG    |
| 4                                        | 104                   | TAC ZZ4         | General / Tactical use TG    |
| 5                                        | 105                   | TAC ZZ5         | General / Tactical use TG    |
| 6                                        | 106                   | TAC ZZ6         | General / Tactical use TG    |
| 7                                        | 107                   | TAC ZZ7         | General / Tactical use TG    |
| 8                                        | 108                   | TAC ZZ8         | General / Tactical use TG    |
| 9                                        | 109                   | TAC ZZ9         | General / Tactical use TG    |
| 10                                       | 110                   | TAC ZZ10        | General / Tactical use TG    |
| 11                                       | 111                   | TAC ZZ11        | General / Tactical use TG    |
| 12                                       | 112                   | TAC ZZ12        | General / Tactical use TG    |
| 13                                       | 113                   | TAC ZZ13        | General / Tactical use TG    |
| 14                                       | 114                   | TAC ZZ14        | General / Tactical use TG    |
| 15                                       | 115                   | TAC ZZ15        | General / Tactical use TG    |
| 16                                       | 116                   | EMER ZZ         | EMERGENCY use TG             |

*Table 3 - Zone "ZZ" for Unencrypted Communications*

### 2.4.7.2 Encrypted Communications

| Zone “YY” for Encrypted Communications |                       |                 |                              |
|----------------------------------------|-----------------------|-----------------|------------------------------|
| Knob Position                          | Talk Group Decimal ID | Displayed TG ID | Usage                        |
| 1                                      | 201                   | CALL YY         | Calling / Initial Contact TG |
| 2                                      | 202                   | CMD YY          | Pre-designated Command TG    |
| 3                                      | 203                   | TAC YY3         | General / Tactical use TG    |
| 4                                      | 204                   | TAC YY4         | General / Tactical use TG    |
| 5                                      | 205                   | TAC YY5         | General / Tactical use TG    |
| 6                                      | 206                   | TAC YY6         | General / Tactical use TG    |
| 7                                      | 207                   | TAC YY7         | General / Tactical use TG    |
| 8                                      | 208                   | TAC YY8         | General / Tactical use TG    |
| 9                                      | 209                   | TAC YY9         | General / Tactical use TG    |
| 10                                     | 210                   | TAC YY10        | General / Tactical use TG    |
| 11                                     | 211                   | TAC YY11        | General / Tactical use TG    |
| 12                                     | 212                   | TAC YY12        | General / Tactical use TG    |
| 13                                     | 213                   | TAC YY13        | General / Tactical use TG    |
| 14                                     | 214                   | TAC YY14        | General / Tactical use TG    |
| 15                                     | 215                   | TAC YY15        | General / Tactical use TG    |
| 16                                     | 216                   | EMER YY         | EMERGENCY use TG             |

*Table 4 - Zone “YY” for Encrypted Communications*

## Chapter Three

# Deployment and Operations Strategies

### Scope

*This Chapter provides information to guide the deployment and operations of 700 MHz Deployable Trunked Radio Systems.*

## 3.1 Infrastructure Deployment and Support

### 3.1.1 Proximate Use of Multiple Deployable Systems

The use of multiple Deployable Systems within the same proximate geographic area is discouraged, due to the high potential for destructive interference.

Using more than one Deployable system in close geographic proximity can cause harmful interference to both systems without careful planning. Whenever two systems are placed in geographic proximity there will be two separate areas of operation. One area geographically close to each deployable system will operate with subscribers normally without interference, while an overlap area will have signal levels such that neither system will be received without interference. Careful planning is needed to make sure the overlap area is outside of the service area required for each deployable system in support of an incident.

If it is required to use two (or more) deployable systems in proximity to each other, then the following planning steps can mitigate any harmful interference (or at least make clear there will be harmful interference).

- First, provide a unique control channel for each system by assigning one of the two control channels to each deployable system. Turn off the unused control channel in that system. Note that this will reduce the number of RF channels available for voice by one.
- Next determine the service coverage areas needed for each system. They cannot overlap; there must be a buffer area between each system where subscriber units of either system will not operate.
- There are two options to determine if the systems will cause interference within the service areas of the systems.
  - One option is to use the TIA TSB-88.1 Service Area Reliability Degradation (SARD) method to model any interference between the deployable systems<sup>14</sup>. This requires access to engineering software, but with the software the determination can be quickly done without preplanning.
  - The other option is best used with a preplanned incident and simply requires the systems to be set up and for drive testing be done to plot out any interference issues.

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<sup>14</sup> See Appendix 1 – Proximate Deployment of Deployable Systems

### 3.1.2 Adjacent Channel Issues

Adjacent channel issues should be minimal for most deployments. Table 5 shows the adjacent channel usage for each of the Trunked Deployable channels. Assuming the adjacent channels are used as a 12.5 kHz bandwidth and using P25 modulation, the Adjacent Channel Rejection is approximately 71 dB<sup>15</sup>. This is equivalent to reducing the transmit power by 71 dB. This applies to both the deployable channel and the adjacent channel transmitter stations. Frequency coordination in other bands do not consider 12.5 kHz adjacent channels during the coordination process and it is rare to have a harmful interference case.

Best practice for local deployable use is to determine adjacent channel use for each deployable frequency in and around the local deployment area as part of making a Trunked Deployable system operational. For deployments out of the local area, agencies will need to coordinate with the incident command for the out of area incident.

| Channel Frequency | FCC Designated Use        | Channel Frequency | FCC Designated Use        |
|-------------------|---------------------------|-------------------|---------------------------|
| 769.21875         | State license             | 769.86875         | General Use               |
| <b>769.23125</b>  | <b>Trunked Deployable</b> | <b>769.88125</b>  | <b>Trunked Deployable</b> |
| 769.24375         | Interop 7CALL50           | 769.89375         | Interop 7FIRE63           |
|                   |                           |                   |                           |
| 769.36875         | General Use               | 774.50625         | Interop 7MOB79            |
| <b>769.38125</b>  | <b>Trunked Deployable</b> | <b>774.51875</b>  | <b>Trunked Deployable</b> |
| 769.39375         | Interop 7MED65            | 774.53125         | State license             |
|                   |                           |                   |                           |
| 769.71875         | State license             | 774.85625         | Interop 7GTAC77           |
| <b>769.73125</b>  | <b>Trunked Deployable</b> | <b>774.86875</b>  | <b>Trunked Deployable</b> |
| 769.74375         | Interop 7TAC55            | 774.88125         | General Use               |

*Table 5 - Table of 700 MHz 12.5 kHz Channels that are Adjacent to Channels Authorized for Deployable Trunked Systems*

### 3.1.3 System Features and Radio Firmware

Systems utilized for Deployable Trunked Systems should be based on a P25 “Core Features”, and possibly “Standard Options” functionality platform. Implementation of systems that utilize vendor proprietary features should be avoided as they may introduce incompatibility between multiple vendor’s equipment that is anticipated in the deployments of these systems. This will also minimize the complexity of

<sup>15</sup> See TIA TSB-88.1F Annex A Table A6 C4FM 25/30 kHz Plan Offsets

subscriber programming. The recommended set of Core Features can be found on the APCO Interoperability Resources web page:

<https://www.apcointl.org/technology/interoperability/interoperability-resources/>.

Firmware management is also an area of concern. Firmware that is extremely dated could introduce issues to include security concerns. Firmware that is very new may have flaws that have not yet been discovered. Both infrastructure and subscribers should utilize firmware that is tested and known to be stable.

## 3.2 Integration Into Incident Communications Plans

Trunked radio systems are designed to optimize the use of available frequency spectrum, offering automatic frequency assignment based on user demand. This is a fundamental advantage during an incident when communication needs can surge unpredictably. Deployable systems are no different, and caution must be taken to not oversaturate the systems, as they are by design limited in their capacity availability. Unlike conventional radio systems, where each communication occurs on a dedicated channel, trunked systems assign channels dynamically from a pool, ensuring that only those needing a channel can access it at any given time. This functionality makes trunked systems especially well-suited for large-scale incidents involving numerous agencies and responders.

Integrating deployable trunked systems into an incident communications plan requires careful consideration of their practical limitations. Although these systems minimize channel congestion and reduce the risk of interference, they can also face delays during high-traffic periods, especially if the system becomes overloaded. Incident communications plans should therefore incorporate strategies to mitigate congestion, such as implementing priority talkgroups and always using a well-defined ICS 205 for all communications, to ensure the proper allocation of available talkgroups. A sample ICS 205 is provided in Appendix 3.

Responder awareness is essential for the smooth operation of trunked radio systems during an incident. Since trunked systems operate differently from conventional radios, responders must be thoroughly trained in how to use the system under various scenarios. This includes understanding how the system assigns channels, how to switch between talkgroups, and how to handle priority communications. Familiarity with trunked radio features ensures that responders can operate efficiently when in consideration of system limitations.

A key consideration when integrating deployable trunked radio systems into incident communications plans is the system's uniqueness particularly in terms of interoperability with different agencies and radio systems. Trunked radio networks often use proprietary technologies or protocols, which can make communication between different agencies or jurisdictions challenging. The use of deployable trunked systems must be predefined, programmed, and tested so disparate subscribers can operate on the systems seamlessly.

To address challenges with other radio systems in use for the incident, incident communications plans must prioritize interoperability. This can be achieved through the use of common interoperability standards, such as the use of shared frequencies or mutual aid talkgroups that are accessible to all responding agencies, regardless of their radio system. Additionally, gateways or bridging technologies can be employed to link

trunked systems with other trunked systems or conventional radio networks. This will ensure that agencies operating on different systems can still communicate effectively. Planning for these interoperability needs, and conducting regular exercises to test these connections, is crucial for ensuring that all responders, regardless of their radio equipment, can work together effectively during an incident.

Radio programming plays a critical role in the integration of trunked radio systems into incident communications plans. The ability to customize radio settings and programming allows agencies to tailor their communication systems to meet specific operational needs during an incident. For deployable systems standardized programming is essential in ensuring that the systems work properly. The standardized template using standardized naming and allocation is a must for ensuring interoperable communications.

| COMMUNICATIONS RESOURCE AVAILABILITY WORKSHEET (ICS 217A)<br>National Deployable Trunked Radio System - ZZ Zone         |                       |                                             |                   |         |        |                | Frequency Band<br><br>700 MHz | Description<br><br>Deployable Trunked Zone ZZ<br>(Unencrypted) |             |                |                         |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------|-------------------|---------|--------|----------------|-------------------------------|----------------------------------------------------------------|-------------|----------------|-------------------------|
| Pg No.                                                                                                                  | Channel Configuration | Channel Name/Trunked Radio System Talkgroup | Eligible Users    | RX Freq | N or W | RX Tone/NAC    | TX Freq                       | N or W                                                         | Tx Tone/NAC | Mode A, D or M | Remarks                 |
|                                                                                                                         | P25 Trunked           | CALL ZZ                                     | All Public Safety |         |        | (DTS) TGID 201 |                               |                                                                |             | D              | Calling/Initial contact |
|                                                                                                                         | P25 Trunked           | CMD ZZ                                      | All Public Safety |         |        | (DTS) TGID 202 |                               |                                                                |             | D              | Command                 |
|                                                                                                                         | P25 Trunked           | TAC ZZ3                                     | All Public Safety |         |        | (DTS) TGID 203 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ4                                     | All Public Safety |         |        | (DTS) TGID 204 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ5                                     | All Public Safety |         |        | (DTS) TGID 205 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ6                                     | All Public Safety |         |        | (DTS) TGID 206 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ7                                     | All Public Safety |         |        | (DTS) TGID 207 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ8                                     | All Public Safety |         |        | (DTS) TGID 208 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ9                                     | All Public Safety |         |        | (DTS) TGID 209 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ10                                    | All Public Safety |         |        | (DTS) TGID 210 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ11                                    | All Public Safety |         |        | (DTS) TGID 211 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ12                                    | All Public Safety |         |        | (DTS) TGID 212 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ13                                    | All Public Safety |         |        | (DTS) TGID 213 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ14                                    | All Public Safety |         |        | (DTS) TGID 214 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | TAC ZZ15                                    | All Public Safety |         |        | (DTS) TGID 215 |                               |                                                                |             | D              | General/Tactical        |
|                                                                                                                         | P25 Trunked           | EMER ZZ                                     | All Public Safety |         |        | (DTS) TGID 216 |                               |                                                                |             | D              | Emergency Use Only      |
|                                                                                                                         |                       |                                             |                   |         |        |                |                               |                                                                |             |                |                         |
|                                                                                                                         |                       |                                             |                   |         |        |                |                               |                                                                |             |                |                         |
|                                                                                                                         |                       |                                             |                   |         |        |                |                               |                                                                |             |                |                         |
|                                                                                                                         |                       |                                             |                   |         |        |                |                               |                                                                |             |                |                         |
| Refer to the National Interoperability Field Operations Guide (NIFOG) for additional technical programming information. |                       |                                             |                   |         |        |                |                               |                                                                |             |                |                         |

ICS 217A Excel

| COMMUNICATIONS RESOURCE AVAILABILITY WORKSHEET (ICS 217A)<br>National Deployable Trunked Radio System - YY Zone         |                       |                                             |                   |         | Frequency Band<br>700 MHz |                | Description<br>Deployable Trunked Zone YY<br>(Encrypted) |        |             |                |                                     |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------|-------------------|---------|---------------------------|----------------|----------------------------------------------------------|--------|-------------|----------------|-------------------------------------|
| Pg No                                                                                                                   | Channel Configuration | Channel Name/Trunked Radio System Talkgroup | Eligible Users    | RX Freq | N or W                    | RX Tone/NAC    | TX Freq                                                  | N or W | TX Tone/NAC | Mode A, D or M | Remarks                             |
|                                                                                                                         | P25 Trunked           | CALL YY                                     | All Public Safety |         |                           | (DTS) TGID 201 |                                                          |        |             | D              | Calling/Initial contact (Encrypted) |
|                                                                                                                         | P25 Trunked           | CMD YY                                      | All Public Safety |         |                           | (DTS) TGID 202 |                                                          |        |             | D              | Command (Encrypted)                 |
|                                                                                                                         | P25 Trunked           | TAC YY3                                     | All Public Safety |         |                           | (DTS) TGID 203 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY4                                     | All Public Safety |         |                           | (DTS) TGID 204 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY5                                     | All Public Safety |         |                           | (DTS) TGID 205 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY6                                     | All Public Safety |         |                           | (DTS) TGID 206 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY7                                     | All Public Safety |         |                           | (DTS) TGID 207 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY8                                     | All Public Safety |         |                           | (DTS) TGID 208 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY9                                     | All Public Safety |         |                           | (DTS) TGID 209 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY10                                    | All Public Safety |         |                           | (DTS) TGID 210 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY11                                    | All Public Safety |         |                           | (DTS) TGID 211 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY12                                    | All Public Safety |         |                           | (DTS) TGID 212 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY13                                    | All Public Safety |         |                           | (DTS) TGID 213 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY14                                    | All Public Safety |         |                           | (DTS) TGID 214 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | TAC YY15                                    | All Public Safety |         |                           | (DTS) TGID 215 |                                                          |        |             | D              | General/Tactical (Encrypted)        |
|                                                                                                                         | P25 Trunked           | EMER YY                                     | All Public Safety |         |                           | (DTS) TGID 216 |                                                          |        |             | D              | Emergency/Use Only (Encrypted)      |
|                                                                                                                         |                       |                                             |                   |         |                           |                |                                                          |        |             |                |                                     |
|                                                                                                                         |                       |                                             |                   |         |                           |                |                                                          |        |             |                |                                     |
|                                                                                                                         |                       |                                             |                   |         |                           |                |                                                          |        |             |                |                                     |
|                                                                                                                         |                       |                                             |                   |         |                           |                |                                                          |        |             |                |                                     |
| Refer to the National Interoperability Field Operations Guide (NIFOG) for additional technical programming information. |                       |                                             |                   |         |                           |                |                                                          |        |             |                |                                     |

ICS 217A Excel

Table 6 - Sample Deployable Trunked System Communications Availability Spreadsheet Template (ICS 217A)

Editable PDF and Excel versions of the ICS 217A can be found at:

<https://www.apcointl.org/technology/interoperability/interoperability-resources/>

### 3.3 On-Scene Interoperability Use Cases

#### **Use Case #1 – Local agency using deployable system to provide coverage at stadium event involving multiple agencies (Planned Event)**

A deployable trunked radio system is activated at the university football stadium to provide enhanced radio coverage and support specialized talkgroups for the law enforcement, fire, and EMS personnel working the event. The public safety response to the football game includes multiple agencies to provide sufficient staffing for the crowd. All public safety agencies in the region have previously received appropriate radio programming to allow them to access the deployable system. The Communications Unit Leader (COML) reviews the operational plan for the event and assigns the talkgroups for specific functions.

#### **Use Case #2 Local agency using deployable system following a tornado to support mutual aid units (Unplanned Incident)**

A tornado has struck a rural community causing wide-spread destruction and disabling a local public safety radio tower. A deployable trunked radio system has been activated to restore local public safety radio service and to support incoming mutual aid units. All public safety agencies in the region have previously programmed their radios to communicate on the deployable trunked system. Local law enforcement, fire, and EMS units can easily switch over to the deployable system and communicate. Incoming mutual aid units are also able to easily access the deployable system.

#### **Use Case #3 – Local Agency transporting its deployable system to another region to aid at the scene of a major incident (Unplanned Incident)**

The local emergency agency has ordered the evacuation of an entire city due to severe flooding and the expected rise of a nearby river. Multiple agencies from the surrounding area are responding to assist as well as agencies from outside the region. A deployable trunked radio system has been placed on elevated terrain near the city to provide coverage to support ambulances which are evacuating a local hospital and two nursing homes. The COML has worked with the Incident Command System (ICS) team and has coordinated with other fixed and deployable systems that are operating in the area. Because all the deployable systems using the FCC-designated interoperable channels share the same WACN code and system ID 101, mobile and portable devices will be able to roam onto the radio network without additional programming.

# ACRONYMS AND ABBREVIATIONS

|                |                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------|
| <b>AES-256</b> | Advanced Encryption Standard (256 bit)                                                           |
| <b>ANS</b>     | American National Standards                                                                      |
| <b>ANSI</b>    | American National Standards Institute                                                            |
| <b>APCO</b>    | Association of Public Safety Communications Officials                                            |
| <b>CAPRAD</b>  | Computer Assisted Pre-coordination Resource And Database system                                  |
| <b>COML</b>    | Communications Unit Leader (Incident Command System position)                                    |
| <b>COMT</b>    | Communications Technician (Incident Command System position)                                     |
| <b>FCC</b>     | Federal Communications Commission                                                                |
| <b>FDMA</b>    | Frequency Division Multiple Access                                                               |
| <b>LMR</b>     | Land Mobile Radio                                                                                |
| <b>NAC</b>     | Network Access Control                                                                           |
| <b>NPSTC</b>   | National Public Safety Telecommunications Council                                                |
| <b>NRPC</b>    | National Regional Planning Council                                                               |
| <b>SDC</b>     | Standards Development Committee                                                                  |
| <b>TDMA</b>    | Time Division Multiple Access                                                                    |
| <b>TIA</b>     | Telecommunications Industry Association                                                          |
| <b>WACN</b>    | Wide Area Communications Network – The WACN ID for Deployable Trunked Radio systems is BF7CC HEX |

# GLOSSARY

**DEPLOYABLE TRUNKED SYSTEM:** A Trunked Radio System designed to be transportable and used at temporary locations.

**ENCRYPTION KEY:** A string of bits that are used to encode (encrypt) and decode (decrypt) data using cryptographic algorithms.

**FDMA (P25 PHASE 1):** A TIA standard for digital modulation designed to replace Narrowband FM modulation.

**SLN:** Storage Location Number – The identifier for a designation location or key slot in radio programming.

**TALK GROUP:** A configurable, pre-programmed, voice pathway on a Radio Communications System that permits properly programmed Radios to communicate with each other.

**T-BAND AREAS:** Part of the UHF television broadcast spectrum from **470-512 MHz** (TV channels 14-20) in the United States is referred to as the UHF-T Band when used for private land mobile radio in certain metropolitan areas.

**TDMA (P25 PHASE 2):** TDMA is more spectrally efficient than FDMA, providing two effective voice paths per 12.5 kilohertz bandwidth.

**TRUNKED RADIO SYSTEM:** An LMR radio system that uses a control channel to automatically assign frequency channels to groups of user radios.

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# APPENDICES

1. Proximate Deployment of Deployable Systems
2. Sample ICS 205
3. Interoperability Planning and Training

## APPENDIX 1 – Proximate Deployment of Deployable Systems

To deploy two or more deployable systems in close geographical proximity, it must be determined if there will be mutual harmful interference between systems. This appendix will detail an engineering approach to make that determination. If the deployable systems will be used for a preplanned event, the best method to determine any interference issues is to set up the systems where they will operate and do a drive test. For non-planned events, drive testing is generally not an option. The example will assume only two systems are used.

The hypothetical event used for the example is a large magnitude earthquake on the San Andreas fault with the epicenter located close to the Cajon Pass in Southern California. This earthquake caused damage to most buildings in the mountain community of Wrightwood. It caused a train derailment in the Cajon Pass with chemical fires. Natural gas and petroleum pipelines were damaged, resulting in fires. The fires blocked Interstate 15 through Cajon pass with many cars and trucks unable to move out of danger. The incident management communications leader working with the County communications staff determined there was not enough capacity to support the recovery operations in both Wrightwood and Cajon Pass. Therefore, trunked deployable systems would be needed. The distance between the two systems is approximately 15 km.

After the interference analysis was completed, it was determined that the two systems could operate without interference.

The steps to do the interference checks using propagation modeling are listed below:

1. Open the engineering software to a map of the operation areas.<sup>16</sup> Draw dividing lines between each system at the boundary of the operating area for each system. See the below example reports to visualize this operation. There should be an area between each system that does not need coverage. This is a buffer zone that probably has harmful interference between the two systems.
2. Enter the technical parameters for each system and then run an ITM (Longley/Rice) matrix study using 50% values for location and variability<sup>17</sup>. Note this will result in showing an area that is greater than the actual coverage.
3. Run a Service Area Reliability Degradation (SARD) study for each location<sup>18</sup>.
4. The map results will show color coded tiles with interference and no interference. There will be a map for each system that shows the *no-interference* and *interference* tiles.
5. Inspect each of the two maps and determine if there is interference in the operating areas of each system. The dividing lines will assist in this determination as any interference tiles in the area between the two lines will not be an issue as this is the non-operations geographic area.

---

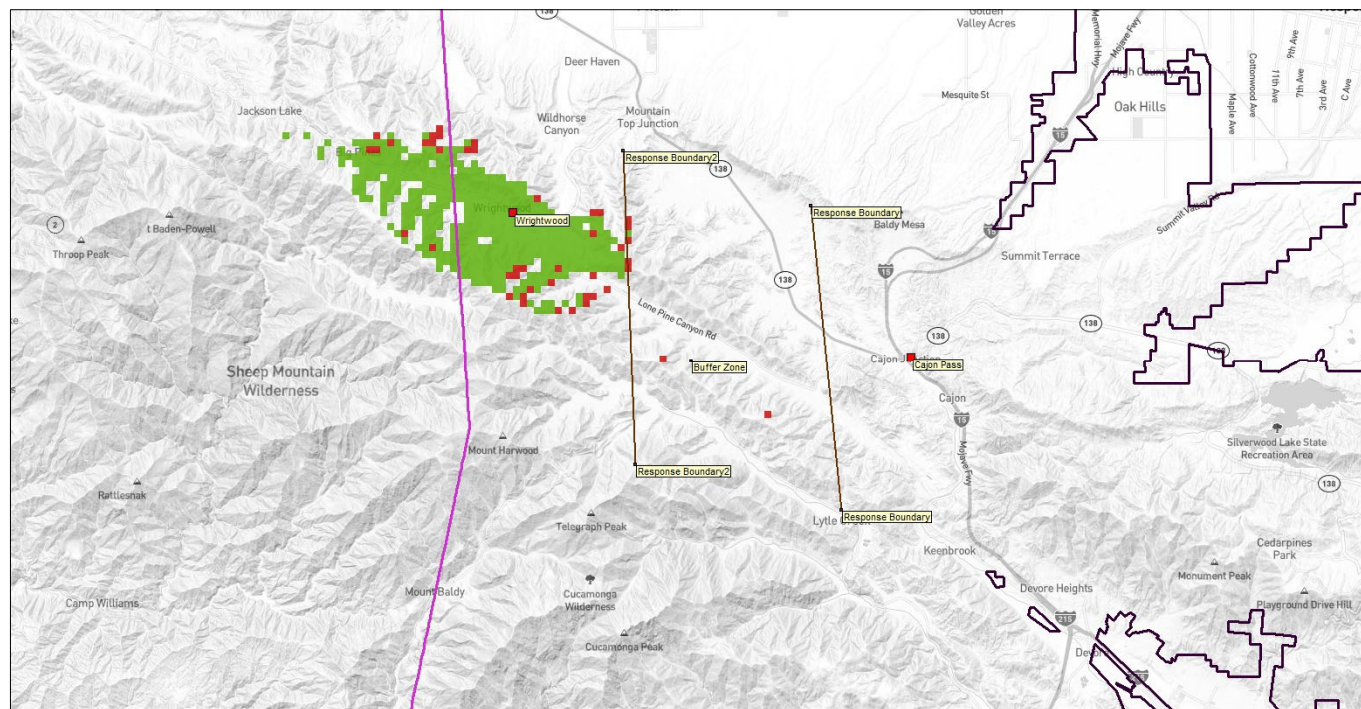
<sup>16</sup> For the example in this appendix the software package used was *Spectrum E*. There are other suitable engineering packages that can be used.

<sup>17</sup> See TSB-88.1 for an explanation of using 50% values and the process for interference determination. This is not a coverage plot but rather an interference analysis.

<sup>18</sup> Note SARD is the terminology used by *Spectrum E*. Other packages may have a different term for this process.

Following publication of this Standard, further analysis of closely-spaced systems may be developed to help inform future system deployment strategies. The results of these will be posted to APCO's Interoperability Resources web page <https://www.apcointl.org/technology/interoperability/interoperability-resources/> for information.

## SARD Interference to Wrightwood Location



 Interference

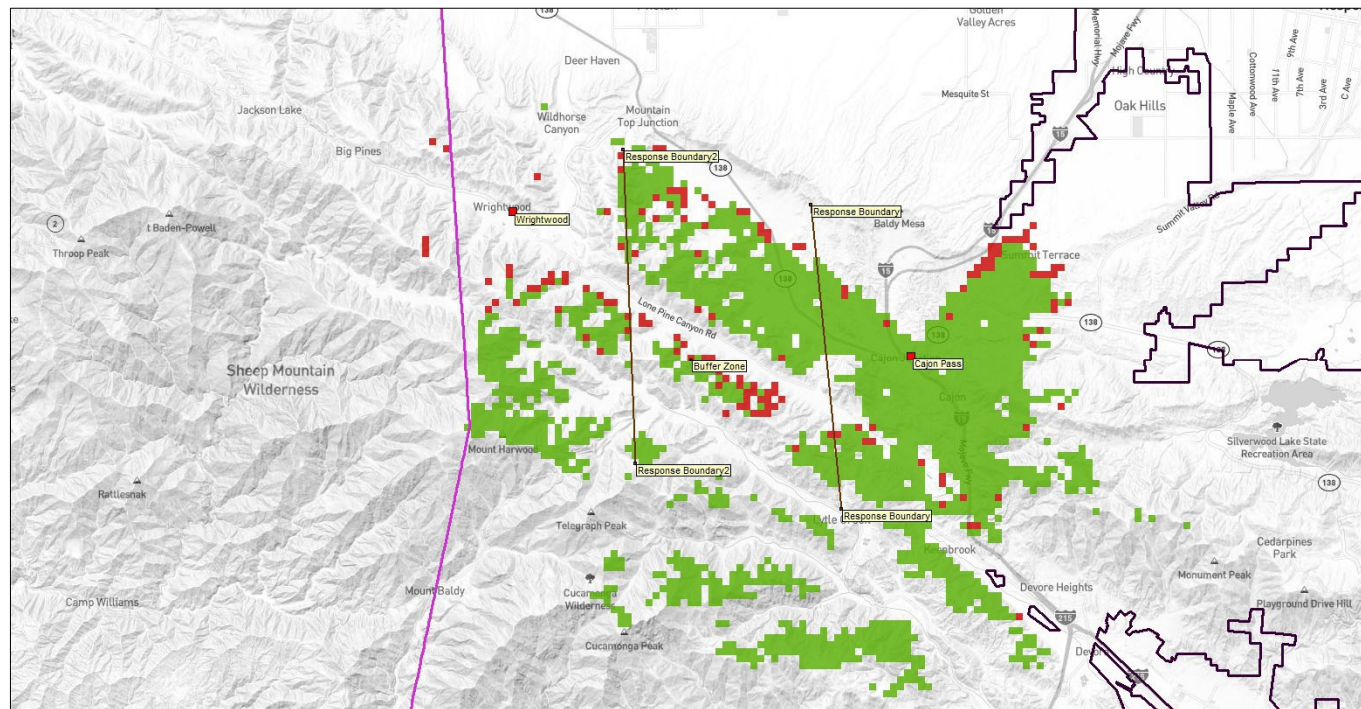
 No Interference

**Prediction:** sard Wrightwood\_dot

| Callsign   | Latitud  | Longitude  | Freq (MHz) | Overlap % | SAR Degradation %  | Emission |
|------------|----------|------------|------------|-----------|--------------------|----------|
| Wrightwood | 34°21'32 | 117°37'45" | 769.2312   | 0         |                    | 8K10F3E  |
| Cajon Pass | 34°18'43 | 117°28'21" | 769.2312   | 0         | 0.0% (From 0.3% To | 8K10F3E  |

Note there are few interference tiles but they are located in the buffer area or on mountain sides and not in the coverage area.

## SARD Interference to Cajon Site



■ Interference

■ No Interference

**Prediction:** sard Cajon\_dot

| Callsign   | Latitude      | Longitude    | Freq (MHz) | Overlap % | SAR Degradation %        | Emission |
|------------|---------------|--------------|------------|-----------|--------------------------|----------|
| Wrightwood | 34°21'32.7" N | 117°37'45" W | 769.23125  | 0         |                          | 8K10F3E  |
| Cajon Pass | 34°18'43.1" N | 117°28'21" W | 769.23125  | 0         | 0.0% (From 0.3% To 0.3%) | 8K10F3E  |

Note there are few interference tiles but they are located in the buffer area or on mountain sides and not in the coverage area.

## APPENDIX 2 – Sample ICS 205

### INCIDENT RADIO COMMUNICATIONS PLAN (ICS 205) EXAMPLE for Anytown, USA

Page 1 of 3

|                                                                   |                                                 |                                                                                                                             |
|-------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Event/Incident Name:<br><b>USA Special Event<br/>Anytown, USA</b> | Date/Time Prepared:<br>June 1, 2025, 1300 hours | Operational Period:<br><b>June 10, 2025, 0400 to June 10, 2025, 2000 hours</b><br><b>Operational Periods Maybe Extended</b> |
|-------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|

| DEPLOYABLE TRUNKING SYSTEM – ZZ ZONE (CLEAR) |     |              |                                         |                                         |                 |      |                                                                     |
|----------------------------------------------|-----|--------------|-----------------------------------------|-----------------------------------------|-----------------|------|---------------------------------------------------------------------|
| ZONE                                         | CH# | FUNCTION     | CHANNEL NAME /<br>TRUNKED TALK<br>GROUP | ASSIGNMENT                              | FREQUENCY       | MODE | REMARKS                                                             |
| ZZ                                           | 1   | Coordination | CALL ZZ                                 | ZZ Zone Calling<br>Channel              | Mobile Trunking | D    | Monitored by Emergency<br>Operations Center When<br>System Deployed |
| ZZ                                           | 2   | Command      | CMD ZZ                                  | ZZ Zone Command<br>Channel              | Mobile Trunking | D    | CLEAR-<br>Command Net purposes                                      |
| ZZ                                           | 3   | Operations   | TAC ZZ3                                 | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 1-Alternate                                         |
| ZZ                                           | 4   | Operations   | TAC ZZ4                                 | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 2-Alternate                                         |
| ZZ                                           | 5   | Operations   | TAC ZZ5                                 | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 3-Alternate                                         |
| ZZ                                           | 6   | Operations   | TAC ZZ6                                 | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 4-Alternate                                         |
| ZZ                                           | 7   | Operations   | TAC ZZ7                                 | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 5-Alternate                                         |
| ZZ                                           | 8   | Operations   | TAC ZZ8                                 | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 6-Alternate                                         |
| ZZ                                           | 9   | Operations   | TAC ZZ9                                 | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 7-Alternate                                         |
| ZZ                                           | 10  | Operations   | TAC ZZ10                                | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 8-Alternate                                         |
| ZZ                                           | 11  | Operations   | TAC ZZ11                                | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 9-Alternate                                         |
| ZZ                                           | 12  | Operations   | TAC ZZ12                                | First Responder<br>Group                | Mobile Trunking | D    | Main Talk Group 10-Alternate                                        |
| ZZ                                           | 13  | Operations   | TAC ZZ13                                | Unassigned/Available                    | Mobile Trunking | D    | Use as directed by the State<br>SWIC or incident COM-L              |
| ZZ                                           | 14  | Operations   | TAC ZZ14                                | Unassigned/Available                    | Mobile Trunking | D    | Use as directed by the State<br>SWIC or incident COM-L              |
| ZZ                                           | 15  | Operations   | TAC ZZ15                                | Unassigned/Available                    | Mobile Trunking | D    | Use as directed by the State<br>SWIC or incident COM-L              |
| ZZ                                           | 16  | Emergency    | EMER ZZ                                 | Emergency<br>Transmissions/Messa<br>ges | Mobile Trunking | D    | Monitored by Ops Center<br>When System Deployed                     |

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**INCIDENT RADIO COMMUNICATIONS PLAN (ICS 205) EXAMPLE**  
**for Anytown, USA**

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|                                                                   |                                                 |                                                                                                                             |
|-------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Event/Incident Name:<br><b>USA Special Event<br/>Anytown, USA</b> | Date/Time Prepared:<br>June 1, 2025, 1300 hours | Operational Period:<br><b>June 10, 2025, 0400 to June 10, 2025, 2000 hours</b><br><b>Operational Periods Maybe Extended</b> |
|-------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|

| DEPLOYABLE TRUNKING SYSTEM – YY ZONE (ENCRYPTED) |     |              |                                         |                                             |                 |           |                                                               |
|--------------------------------------------------|-----|--------------|-----------------------------------------|---------------------------------------------|-----------------|-----------|---------------------------------------------------------------|
| ZONE                                             | CH# | FUNCTION     | CHANNEL NAME /<br>TRUNKED TALK<br>GROUP | ASSIGNMENT                                  | FREQUENCY       | MODE      | REMARKS                                                       |
| YY                                               | 1   | Coordination | CALL YY                                 | YY Zone Calling Channel                     | Mobile Trunking | ENCRYPTED | Monitored by Emergency Operations Center When System Deployed |
| YY                                               | 2   | Command      | CMD YY                                  | YY Zone Command Channel                     | Mobile Trunking | ENCRYPTED | CLEAR-Command Net purposes                                    |
| YY                                               | 3   | Operations   | TAC YY3                                 | Police Special Operations Division          | Mobile Trunking | ENCRYPTED | Use as directed by Police Operation Command                   |
| YY                                               | 4   | Operations   | TAC YY4                                 | State Fusion Center                         | Mobile Trunking | ENCRYPTED | Use as directed by State Fusion Center                        |
| YY                                               | 5   | Operations   | TAC YY5                                 | LE Coordination                             | Mobile Trunking | ENCRYPTED | LE Coordination Zone A                                        |
| YY                                               | 6   | Operations   | TAC YY6                                 | LE Coordination                             | Mobile Trunking | ENCRYPTED | LE Coordination Zone B                                        |
| YY                                               | 7   | Operations   | TAC YY7                                 | LE Coordination                             | Mobile Trunking | ENCRYPTED | LE Coordination Zone C                                        |
| YY                                               | 8   | Operations   | TAC YY8                                 | Fire and EMS                                | Mobile Trunking | ENCRYPTED | Fire/EMS Coordination Zone A                                  |
| YY                                               | 9   | Operations   | TAC YY9                                 | Fire and EMS                                | Mobile Trunking | ENCRYPTED | Fire/EMS Coordination Zone B                                  |
| YY                                               | 10  | Operations   | TAC YY10                                | Fire and EMS                                | Mobile Trunking | ENCRYPTED | Fire/EMS Coordination Zone C                                  |
| YY                                               | 11  | Operations   | TAC YY11                                | Fire and EMS                                | Mobile Trunking | ENCRYPTED | Fire/EMS EXPANDING Incidents                                  |
| YY                                               | 12  | Operations   | TAC YY12                                | Fire and EMS                                | Mobile Trunking | ENCRYPTED | Fire/EMS Contract Support Resources                           |
| YY                                               | 13  | Operations   | TAC YY13                                | STATE EMA                                   | Mobile Trunking | ENCRYPTED | External Affairs Coordination                                 |
| YY                                               | 14  | Operations   | TAC YY14                                | Unassigned & available for event operations | Mobile Trunking | ENCRYPTED | Use as directed by SWIC or incident COM-L                     |
| YY                                               | 15  | Operations   | TAC YY15                                | Unassigned & available for event operations | Mobile Trunking | ENCRYPTED | Use as directed by SWIC or incident COM-L                     |
| YY                                               | 16  | Emergency    | EMER YY                                 | Emergency Transmissions/Messages            | Mobile Trunking | ENCRYPTED | Monitored by Ops Center When System Deployed                  |

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**INCIDENT RADIO COMMUNICATIONS PLAN (ICS 205) EXAMPLE**  
**for Anytown, USA**

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|                                                                   |                                                 |                                                                                                                             |
|-------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Event/Incident Name:<br><b>USA Special Event<br/>Anytown, USA</b> | Date/Time Prepared:<br>June 1, 2025, 1300 hours | Operational Period:<br><b>June 10, 2025, 0400 to June 10, 2025, 2000 hours</b><br><b>Operational Periods Maybe Extended</b> |
|-------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|

SPECIAL INSTRUCTIONS: \*\*\*Any requests to utilize the Anytown, USA Deployable Trunking System (Zones YY or ZZ) shall be coordinated through the Office of the Statewide Interoperability Coordinator (SWIC) or Incident COM-L. \*\*\*

PREPARED BY: Incident COML  
NAME:  
SIGNATURE:  
DATE/TIME: June 1, 2025, 1300 Hours

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## APPENDIX 3 – Interoperability Planning and Training

To optimize the many benefits of (deployable trunking/nationwide public safety interoperability) technology, it is critical that all first responder organizations plan for and practice the use of these important communications tools. After a disaster or other significant incident occurs, it is too late to learn how to utilize these technologies effectively.

Fundamental planning for operational consistency with the Guidelines described in this publication should be based on four basic assumptions.

1. All public safety organizations will follow the tenants of these operational Guidelines.
2. Organizations will coordinate with the Statewide Interoperability Coordinator (SWIC) and Regional Planning Committees (RPC) to utilize a standardized radio template, using National Interoperability Field Operations Guide (NIFOG) frequency/talkgroup naming.
3. Frequencies and talkgroups supporting nationwide interoperability will be programmed into an organization's mobile and portable radios with users understanding fully how to utilize the resources.
4. Training and exercises will be developed that recognize and plan for the use of the communications resources to support incidents at the local, regional, and nationwide level.

Fundamentally, training in the use of these communications resources occurs at the local level and local, state, and other public safety agency levels. Agency administrators must assume responsibility for ensuring that all personnel receive basic and continuing instruction. When agencies fail to support basic and continuing training in the use of (deployable trunking/nationwide public safety interoperability) technologies, effective communications in response to disasters is impaired.

Organizations with multi-jurisdictional cross border mutual aid agreements typically are well versed with interoperability; however, planning and operations may be limited to discrete areas. Even when there have been established programs of interoperability, existing plans and training should be reexamined to ensure consistency with the planning Guidelines described above. This means that even at the most basic levels, amendments to existing operations may be needed in order to support incidents and emergencies of a larger scale.

While law enforcement agencies operate within jurisdictional boundaries, many states have enacted legislation to expand operational authorities in an emergency. Law enforcement officers at the local level may also have the need to interoperate with state and federal authorities within their areas of responsibility. Through the use of these Guidelines, communications confusion and disorganization can be reduced even with the most challenging incidents. Accordingly, while law enforcement officials may not cross boundaries routinely, it is vital that planning and operational training occur on a routine basis for those extraordinary events that challenge effective incident responses.

SWICs should be involved in all aspects of planning and training. Not only can they offer insight into exercises, but they can also reutilize "lessons learned" with other organizations within areas of responsibility. SWICs may recommend that even a local exercise incorporate state public resources into the mix of users. By understanding emergency communications at the local level, SWICs can more effectively organize regional and multi-state planning and operational training.



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