



P25 Alerting Methods: TGID, QCII, and Call Alert

The G-Series P25 Voice Pager is designed to behave and operate exactly like the 2-tone voice paging technology it replaces. The pager is a P25 compliant receive only device that does not register or affiliate on the network. The pager supports Analog 2-Tone and Digital P25 protocols, allowing it to offer a range of solutions that bridge the gap between analog and digital technology.

There are multiple ways the pager can be configured on a P25 system, depending on the application. The pager can be alerted over P25 using TGIDs, QCII (2-Tone over P25) or Call Alert. Each approach has its own “Pros” and “Cons” and must be evaluated accordingly. In this document we will review each of these alerting methods and how they compare to each other.

QCII Over P25

This feature is supported by several Portable radio manufacturers and now the Unication G2-G5 Pagers. From a Dispatching process, it is similar to sending 2 tone IDs over an analog RF Channel, but in this case the 2 tone IDs are digitized and sent over a TGID. Quick Call II/ 2-Tone Over P25 works over Motorola, Kenwood, Harris and Airbus AMBE+2 RF Systems.

How Does It Alert?

The received TGID is decoded and if a programmed 2 tone ID is detected the pager will alert, play back and store the associated Dispatch generated voice message.

How Does it Monitor TAC or Other Interoperable TGIDs?

If the System supports TGID Priority the pager can be set up to monitor select TGIDs along with the TGID that 2 tone IDs are transmitted over. Alternatively, the pager can be configured for a Selective Call with Revert Mode, a mode supported by the current 2 tone only pagers, where the pager is mute until its 2 tone ID is detected on the Dispatch TGID and then it will play the Dispatch initiated message followed by activity on programmed TAC TGIDs.

POSITIVE BENEFITS OF QCII/ 2-TONE OVER P25:	FROM A NEGATIVE STANDPOINT:
<ol style="list-style-type: none"> 1. Minimizes the use of TGIDs 2. Seamlessly integrates into current Dispatching operations 3. Pager behavior closely matches that of the Minitor/G1 Analog pagers and uses identical QCII Tone sets as Motorola 	<ol style="list-style-type: none"> 1. Stacked 2 tone IDs can take time to transmit (just like current analog paging) 2. For wireless console applications, another Control Station may be required 3. Requires a unique 2 tone set (unique tone set is supported by Console Encoders)

Additional Resources (YouTube Programming Tutorials, Training Literature):



TGID Alerting

Whereas a 2-Tone pager is programmed with 2-Tone or Long Tone IDs, the G-Series pager can be programmed to use TGIDs (Talk Group IDs). Select TGIDs can be designated as “Paging” TGIDs, meaning once decoded the pager will emit an alert tone and store the associated message. In addition to “paging” TGIDs it can be programmed to monitor one or more TAC or Interoperable TGIDs on a Selector Knob basis.

In a P25 System, TGIDs are affiliated to a specific Site, but System Administrators can configure their system to “Force” TGIDs to Critical Sites thus allowing for a larger geographical RF coverage for pager Users.

The System Administrator will then assign the “paging” TGIDs to specific Sites (or Simulcast Zone) over which they will be transmitted. These “paging” TGIDs are newly assigned TGIDs and are only used for transmitting short dispatch messages. Although the P25 Specification allows for up to 65K TGIDs Systems may be limited to a smaller number due to licensing, sub-system allocation reasons or concerns of running out of TGIDs.

The pager is then programmed for the “paging” TGID and any TAC or Interoperable TGIDs which will be monitored. It is also programmed with the System information (WACN/System ID) and Site information (RFSS, Site IDs and their associated Control Channels).

How Does It Alert?

The pager is programmed with the target system information and TGIDs. Paging TGIDs are ones that are dispatch initiated, and these can be programmed for unique alerting tones (or customized wav files). When the pager detects the paging TGID it will do two things; it will begin storing the voice message and at the same time begin alerting for a specified period of time (set in programming software for 1 to 4 seconds). Once the alert duration has expired the pager will begin playing the received voice message from the beginning.

How Does it Monitor TAC or Other Interoperable TGIDs?

Each selector knob setting can be assigned one or more TGIDs. If selector knob setting 1 is configured for a “paging” TGID and other types of TGIDs the pager will always prioritize the “paging” TGID (if the P25 System supports Priority). At the end of the paging message the pager will monitor other programmed TGIDs for activity and play the transmissions.

POSITIVE BENEFITS OF TGID PAGING:	FROM A NEGATIVE STANDPOINT:
<ol style="list-style-type: none">1. There are 65K TGIDs defined in P252. Efficient from a Dispatching Standpoint3. Resource efficient when multi-selects are used (i.e., 1 voice channel versus many when multiple TGIDs are to be sent for an incident)4. Prioritization of Paging TGIDs is possible5. Forcing to Critical Sites allows for improved RF Coverage	<ol style="list-style-type: none">1. Number of TGIDs may be limited due to licensing, allocation, or anticipated growth2. For Wireless Console applications, where a Control Station or Mobile radio provides system access, additional Stations and/or mobile radios may be required

Additional Resources (YouTube Programming Tutorials, Training Literature):



Call Alerts

There are applications where Fire Stations have a Control Station that receives a Dispatch generated Call Alert. The Control Station upon detecting the Call Alert enables a Siren or other alerting method. Then, over a common TGID, the Dispatch message is sent. In such applications, it has been requested that the Fire Team be alerted with this Call Alert and listen to the message on the defined TGID, with the Unication pager this is possible. In fact, the pager can be programmed for multiple Call Alerts in situations where other Station alerts are to be monitored. The important point to remember is the Unication pager does not transmit, it only monitors so it can be programmed for multiple SUIDs.

How Does It Alert?

The pager is programmed for the appropriate SUID and the desired Alerting Tone is selected. Upon receiving the Call Alert, the pager will emit the desired Alerting Tone. After a period, when the TGID is detected, the pager will begin playing and storing the received message.

How Does it Monitor TAC or Other Interoperable TGIDs?

The pager is muted until a Call Alert is received. Once it is detected the pager “reverts” to the TGID assigned for the Call Alert’s associated message. The pager can monitor other TGID generated traffic by switching to another Selector Knob setting on the pager.

POSITIVE BENEFITS OF CALL ALERTS:	FROM A NEGATIVE STANDPOINT:
<ol style="list-style-type: none"> 1. Pagers can integrate seamlessly into an existing application. 2. No change in the Dispatching process 3. Pagers will shadow the SUID 	<ol style="list-style-type: none"> 1. Pager Users must be in the same coverage area as the Control Station 2. There is no SUID priority therefore to ensure a specific Call Alert is not missed, so it should be the only one programmed for that Selector Knob setting.

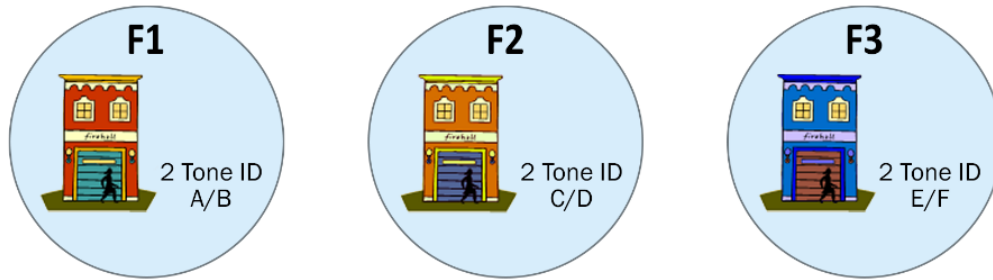
Additional Resources (YouTube Programming Tutorials, Training Literature):



Comparison of P25 Alerting Methods:

	TGID Paging	2-Tone Over P25	Call Alerts
PROS	<ul style="list-style-type: none"> • Availability of TGIDs • Efficient <ul style="list-style-type: none"> ○ Simple for Dispatcher ○ Multi-select • Forcing allows multi-site 	<ul style="list-style-type: none"> • Minimizes use of TGIDs • Minimal changes to Dispatching requirements • Pager behavior closely matches that of Minitor/G1 Analog pagers 	<ul style="list-style-type: none"> • May already be in use • No change to Dispatching process • Pagers will “shadow” the Control Station’s SUID
CONS	<ul style="list-style-type: none"> • TGIDs may be limited • For Wireless Dispatch Applications there is a Control Station /TGID cost 	<ul style="list-style-type: none"> • Stacked Calls take time to transmit • For Wireless Dispatch Applications, another Control Station/TGID may be needed • Uses select Tone Set 	<ul style="list-style-type: none"> • Pagers must be in Station coverage • Only 1-SUID/Selector Knob (No Priority)

Current Analog Environment



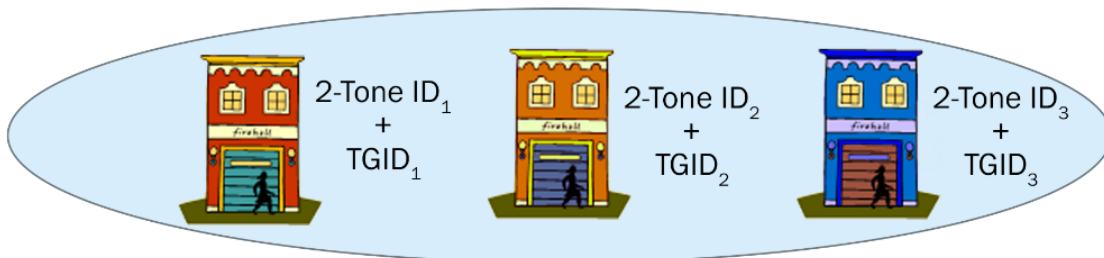
- Three Fire Stations with individual “Tone Out” 2 Tone IDs.
- On different RF frequencies, but they could be on a common RF frequency where PL/DPL is used for privacy.
- If on a common frequency, it is possible each Fire Station’s pager may be programmed with each other’s IDs for Mutual Aid reasons.

New P25 Environment: Using TGID Paging



- Three Fire Stations with individual Talk Group IDs.
- The TGIDs are “Forced” to specific sites/simulcast areas, a 2-Way radio is not needed at each site for TGID affiliation.
- It is possible each Fire Station’s pager may be programmed with each other’s IDs for Mutual Aid reasons.

New P25 Environment: Using 2-Tone Over Digital



- Three Fire Stations with individual “Tone Out” 2 Tone IDs.
- Each Fireman has a G2-G5 programmed with a common TGID AND a 2-Tone ID.
- It is possible each Fire Station’s pager may be programmed with each other’s 2-Tone IDs for Mutual Aid reasons.

New P25 Environment: Using Call Alerts



- Three Fire Stations each with a Control Station responding to their Call Alert.
- Each Fireman has a G2-G5 programmed with their Station’s Call Alert.
- It is possible each Fire Station’s pager may be programmed with each other’s Call Alerts for Mutual Aid reasons.