Tait TPAK5A Part 90R Application Review
Public Safety Bands: 764-776 MHz and 794-806 MHz

1. Explanation of which Narrowband or Wideband channel segments the device is capable of supporting from those listed in 90.531(b), and 90.531(c).

- For Narrowband segments:

a) Is the device capable of operating on "General Use" channels listed in 90.531(b)(5) or "State" channels listed in 90.531(b)(6)?

TPAK5A is capable of transmitting on all channels (1 thru 1920) as listed in 90.531(b). This covers 'General Use', 'State' and 'Nationwide' channels.

b) Is the device ONLY capable of operating on Low Power "Regional" channels listed in 90.531(b)(3) or Low Power "Itinerant" channels listed in 90.531(b)(4)?

TPAK5A is not a 'low power only' device, but when configured for FCC operation will only operate below 2W on the 'Low Power Regional' channels listed in 90.531(b)(3) or 'Low Power Itinerant' channels listed in 90.531(b)(4)

c) Is the device capable of operating on "Nationwide" Interoperability channels listed in 90.531(b)(1)?

TPAK5A is capable of transmitting on all channels (1 thru 1920) as listed in 90.531(b). This covers 'Nationwide' channels.

- For Wideband segments:

d) Is the device capable of operating on Interoperability channels listed in 90.531(c)(1)?

TPAK5A is not a wideband device and not suitable for operation on 'Interopererability' channels listed in 90.531(c)(1)

2. Statement regarding the modulation capabilities of the device:

- Does the device support digital Voice only, Data only, or both [see 90.547]?

The TPAK5A supports both digital voice and digital data in accordance with 90.547

- Does the device support analog voice operation [see 90.535(a)]?

The TPAK5A supports analogue voice in accordance with 90.535 (a)

3. Verify the following Interoperability Channel Operation requirements listed in 90.531 and 90.547 for Narrowband mobile, portable, or control devices only, given the information from #1. and #2. above:

a) Designed for Data ONLY Operation on Nationwide, General Use or State channels - Must be capable of operating on the data interoperability channels listed in 90.531(b)(1)(i).

Not applicable. The TPAK5A supports both digital voice and digital data

b) Designed for Voice ONLY Operation on Nationwide, General Use or State channels - Must be capable of operating on the nationwide and calling only interoperability channels listed in 90.531(b)(1) and (b)(1)(ii), but do not have to operate on data only channels listed in 90.531(b)(1)(i).

Not applicable. The TPAK5A supports both digital voice and digital data

c) Designed for BOTH Voice and Data Operation on Nationwide, General
Use or State channels - Must be capable of operating on all nationwide interoperability
channels including data only and calling only channels listed in 90.531(b)(1), (b)(1)(i),
and (b)(1)(ii).
TPAK5A is capable of operating on all channels (1 thru 1920) as listed in 90.531(b). This covers 'General
Use', 'State' and 'Nationwide' channels.

d) Designed for Low Power ONLY Operation on Regional/Itinerant channels –
Must operate ONLY on the data/voice channels listed in 90.531(b)(3) or (b)(4).
TPAK5A is not a 'low power only' device, but when configured for FCC operation will only operate
below 2W on the 'Low Power Regional' channels listed in 90.531(b)(3) or 'Low Power Itinerant' channels
listed in 90.531(b)(4).   There is also a statement in the user guide indicating that regional/itinerant
channels should be set as low power.

**4. Verify the following capability requirements for all Wideband devices only, given
the information from #1. and #2. above:**
a) Designed for Data ONLY Operation on Nationwide Interoperability channels - Must
operate on the wideband data interoperability channels listed in 90.531(c)(1).
Not Applicable. TPAK5A is not a wideband device

**5. Application filing requirements for Narrowband mobile, portable or control
devices
only:**
**- Voice Operation on General Use, State, or Nationwide Voice Interoperability
channels:**
a) Emission limitation (ACP) compliance for each combination of channel bandwidth and
modulation for all band plans - 90.543.
Complies with ACP requirements. Refer to test report 2291

b) Attestation of voice path efficiency compliance for operation on General Use and State
channels only – 90.203(m) & 90.535(d).
Currently one voice channel in 12.5 kHz. Would require half rate vocoder to achieve one voice channel in
6.25 kHz

c) Attestation of operation on Nationwide Voice Interoperability and Calling Only
channels – 90.547.
TPAK5A is capable of transmitting on all channels (1 thru 1920) as listed in 90.531(b). This covers
Nationwide 'Interoperability', and 'Calling' channels.

- For Voice Only devices, attestation to 90.547(a)(3).
Not applicable. The TPAK5A supports both digital voice and digital data

d) Attestation of compliance to Project 25 FDMA Common Air Interface (ANSI 102)
standards for operation on Nationwide Voice Interoperability and Calling Only channels
only - 90.548(a)(1).
The TPAK5A complies with ANSI/TIA/EIA−102 standards

e) Frequency stability compliance for all band plans - 90.539(a) & (c).
Complies with frequency stability requirements. Refer to test report 2291

f) Transmitting power compliance for all band plans - 90.541(b) & (c).
Complies with power requirements. Refer to test report 2291

- Data Operation on General Use, State, or Nationwide Data Interoperability channels:
g) Emission limitation (ACP) compliance for each combination of channel bandwidth and modulation for all band plans - 90.543.
Complies with ACP requirements. Refer to test report 2291

h) Attestation of data rate efficiency compliance for General Use and State channels only - 90.535(b).
Complies – 4.8 kbps for 6.25 kHz bandwidth.

i) Attestation of operation on Nationwide Data Interoperability channels listed in 90.531(b)(1)(i) only – 90.547.
TPAK5A is capable of transmitting on all channels (1 thru 1920) as listed in 90.531(b). This covers Nationwide 'Interoperability' channels.

- For Data Only devices, attestation to 90.547(a)(2).
Not applicable. The TPAK5A supports both digital voice and digital data

j) Attestation of compliance to Project 25 Data Overview (ANSI 102) standards for operation on data interoperability channels listed in 90.531(b)(1)(i) only - 90.548(a)(2).
TPAK5A is capable of transmitting on all channels (1 thru 1920) as listed in 90.531(b). This covers 'Interoperability' channels.

k) Frequency stability compliance for all band plans - 90.539(a) & (c).
Complies with frequency stability requirements. Refer to test report 2291

l) Transmitting power compliance for all band plans - 90.541(b) & (c).
Complies with power requirements. Refer to test report 2291

- Low Power Operation (mobiles and portables only) on Regional/Itinerant channels:
m) Emission limitation (ACP) compliance for each combination of channel bandwidth and modulation for all Low Power channel band plans - 90.543.
TPAK5A is not 'Low Power Only' device, but when configured for US operation will only operate below 2W on Regional/Itinerant Channels. There is also a statement in the user guide indicating that regional/itinerant channels can only operate at low power. Complies with ACP requirements. Refer to test Report 2291.

n) Attestation of low power ONLY operation on Low Power Regional/Itinerant channels listed in 90.531(b)(3)&(b)(4) – 90.541(b)&(c).
TPAK5A is not 'Low Power Only' device, but when configured for US operation will only operate below 2W on Regional/Itinerant Channels. There is also a statement in the user guide indicating that regional/itinerant channels can only operate at low power.

- For Low Power Only devices, attestation to 90.547(a)(1).
Not applicable. TPAK5A is not a 'Low Power Only' device.

o) Attestation of data rate efficiency compliance for (non-voice) data capable devices operating on Low Power Regional/Itinerant channels only - 90.535(b).
[*data efficiency applies to all (non-voice) narrowband channels*]
Complies – 4.8 kbps for 6.25 kHz bandwidth.

p) Frequency stability compliance for all band plans - 90.539(c).
Complies with frequency stability requirements. Refer to test report 2291

q) Transmitting power compliance for all band plans - 90.541(d).
Complies with power requirements. Refer to test report 2291

6. Application filing requirements for Wideband mobile, portable, or control devices only:
- Data Operation:
a) Emission limitation (ACP) compliance for each combination of channel bandwidth and modulation for all band plans - 90.543.
Not Applicable. TPAK5A is not a wideband device

b) Attestation of data rate efficiency compliance for wideband data channels listed in 90.531(c) - 90.535(c).
[*data efficiency applies to all (non-voice) wideband channels*]
Not Applicable. TPAK5A is not a wideband device

c) Attestation of Data Interoperability Channel operation for wideband data interoperability channels listed in 90.531(c)(1) only.
Not Applicable. TPAK5A is not a wideband device

d) (future) Attestation of compliance to Wideband Data (ANSI 902) standards - for data interoperability channels listed in 90.531(c)(1) only - 90.548(??).
Not Applicable. TPAK5A is not a wideband device

e) Frequency stability compliance for all band plans - 90.539.
Not Applicable. TPAK5A is not a wideband device

f) Transmitting power compliance for all band plans - 90.541.
Not Applicable. TPAK5A is not a wideband device

7. All devices – other applicable sections of Part 90, Sub-Part I – Technical Requirements (90.201 – 90.219)
Complies with all requirements. Refer to test report 2291.

8. Encryption – optional, but must conform to standard if included:
a) attestation of compliance with 90.553(a) & (b) if encryption is included
- allowed on all channels except nationwide calling only interoperability channels
When the Radio is configured for US operation, Encryption will be prevented on the two USA nationwide 'Interoperability' calling channels.

The safety and compliance manual is being updated to indicate that encryption must not be used on the two USA nationwide 'Interoperability' calling channels.

- user must be able to disable encryption
The safety and compliance manual is being updated to indicate that radios employing encryption must be configured with the ability for the user to readily disable encryption.

- includes Project 25 encryption protocol listed in 90.553(b)
Encryption implemented in the TPAK5A includes the P25 DES encryption protocol as listed in 90.553b