



Part 90 Narrowbanding (KDB Publication 579009) TCB Workshop

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Voice vs. Data

(References FCC-96-492 and 92-235)

● Definitions

- Telephony: used for speech or, in some cases, other sounds
- Telegraphy: used for documentary matter (eg: written, printed, fixed images)
- Telemetry: used for measurement instruments

● Requirements

- Telephony must meet the voice channel standard
- Telegraphy or telemetry must meet the data rate standard
- Certification for both telephony and telegraphy or telemetry must meet both standards

● Use of external modems is prohibited unless authorized with the device



Voice Channel Background

150-174 MHz and 421-470 MHz

- 6.25 kHz BW Voice Channel(s)
 - Requires Digital FM (F1W, F1D, or F1E)
 - FCC rules do not specify a standard and industry has not adopted a standard
 - P25 Phase 1 does not meet the 6.25 kHz BW requirements
 - 2 slot TDMA in a 12.5 kHz BW or 4 slot TDMA in a 25 kHz BW
- 12.5 kHz BW Voice Channel(s)
 - Analog FM (F3E): required dual mode device to use this emission designator up until March 18, 2013
 - Digital FM (F1W, F1D, or F1E)
 - P25 Phase 1: C4FM (4FSK)
- TETRA: 25 kHz channel: GMSK or GFSK
 - 4 Slot TDMA (G1W or D1W)



§ 90.203(j) Voice Requirements 150-174 MHz and 421-470 MHz

- Ritron Waiver of § 90.203(j)(5) requirement for one voice-channel per 6.25 kHz BW:
 - Order: DA 13-431
http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0325/DA-13-431A1.pdf
 - Erratum: DOC-319771
http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-319771A1_Erratum.doc
 - Applies to all applicable narrowbanding applications with **voice capability**
 - Synchs narrowbanding requirements to anticipated completion of the P25 Phase 2 standard
 - Effective Dates: March 18, 2013 - Jan. 1, 2015



§ 90.203(j) Voice Requirements

150-174 MHz and 421-470 MHz

- Waives § 90.203(j)(4)(ii) requirement that 12.5 kHz voice BW devices be multi-mode
- Waiver permits devices with 2 voice channels per 25 kHz BW
- Waiver permits devices with one voice channel in a 12.5 kHz BW
- Analog 12.5 kHz BW (F3E) devices do not have to be multi-mode



§ 90.203(j) Data Requirements

150-174 MHz and 421-470 MHz

- Ritron Waiver does not apply to data (DA 13-431 Footnote 32):
 - We do not waive the requirement that equipment with a channel bandwidth of more than 6.25 kHz that is capable of transmitting data must be capable of supporting a minimum data rate of 4800 bits per second per 6.25 kHz of channel bandwidth.
- There have been no changes to the Data narrowbanding spectral efficiency requirements of §§ 90.203(j)(4) and 90.203(j)(5)



PBAs and Note Codes

- PBA no longer required for narrowbanding special provisions of §§ 90.203(j)(4) and (5)
 - Note: § 90.203(j)(8) devices require PBA (KDB Publication 388624)
- Note Code ES - Data Efficiency Standard § 90.203(j)(4), (5):
 - Use for data BWs ≥ 12.5 kHz
 - “This equipment is capable of supporting a minimum data rate of 4800 bits per second per 6.25 kHz of channel bandwidth.”
- Note Code J8 - § 90.203(j)(8):
 - Use for devices where data rate < 4800 bps
 - § 90.203(j)(8) is on the PBA List (KDB Publication 388624)
 - “This device as been authorized under 90.203(j)(8) with a data rate of less than 4800 bits per second per 6.25 kHz of channel bandwidth based on information submitted justifying why the slower data rate provides more spectral efficiency than the standard data rate”



Public Safety

● T-Band (470-512 MHz)

- Order: FCC 12-642 - Effective April 26, 2012

http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-12-642A1.pdf

- Migration to 12.5 kHz BW requirement is waived

- Order on Reconsideration: DA 12-1743 – Effective Nov. 30, 2012

http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-12-1743A1.pdf

- New equipment can be authorized with one voice path per 25 kHz BW

● Tetra (450-470 MHz) Report and Order: FCC 12-114 Effective Oct. 10, 2012

http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0921/FCC-12-114A1.pdf

- Operations using equipment designed to operate with a 25 kHz channel BW may be authorized up to a 22 kHz BW if the equipment meets the Adjacent Channel Power limits of § 90.221
- PLMR and not interoperable with the Public Safety Pool
 - 450-470 MHz portion of the UHF band (421-512 MHz)
 - Business/Industrial Land Transportation 800 MHz band channels (809-824/854-869 MHz) that are not in the National Public Safety Planning Advisory Committee (NPSPAC) portion of the band



Additional Narrowbanding Releases

● General Guidance Public Notice (DA 13-376): Released March 14, 2013

http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0314/DA-13-376A1.pdf

- Overview of key provisions
- Modification of licenses
 - Licensing tool for wide band licenses (>11.25 kHz)
<http://www.fcc.gov/encyclopedia/narrowbanding-overview>

● 700 MHz Public Safety

- Seventh Report and Order Notice of Proposed Rulemaking (FCC 13-40): Released April 1, 2013

http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0401/FCC-13-40A1.pdf

- Narrowbanding schedule to be determined



700 MHz Public Safety Broadband Rulemaking

- FCC initiated a Notice of proposed rulemaking for the 700 MHz Public Safety Broadband (FCC 13-31)
 - Proposal to implement provisions of the Spectrum Act of 2012
 - Proposals for rules for (758 – 768 MHz and 788 – 798 MHz)
 - Specifically suspended equipment authorization in this band pending new rules



Part 90 Line Entry Issues

- Changes pending in near future to adjust system compliance with rules:
 - Limit max BW to 11K3 from 150-174 and 421-512 MHz
 - Allow Class II changes in 470-512MHz band to 20K0
 - No class II changes to add wideband if grant issued after 4/26/2012
 - If frequency is in bands 150-174 or 421-512 MHz when rule part is 90.203(j)(4,5,7,or 8) allow 20K0
 - Tetra – If frequency is in 450-470 MHz and rule part is 90.221 allow 22K0 necessary bandwidth
- Currently system limits maximum BW to 11K3 from 150-174 and 450-512 MHz with the following exceptions:
 - If frequency is 470-512 MHz when rule part is 90.203(j)(4,5,7,or 8) allow 20K0
 - If rule part is 90.217 allow 20K0
 - If rule part is 90.265(b) allow 54K0



Part 90 Line Entry Issues

- Line Entry Exceptions handled manually
 - Until changes on previous slide are implemented any incorrect blocks by system are manually implemented
 - City of Lewiston Waiver
 - Recon Robotics Waiver
- Exception Procedure
 - Complete form 731 with bandwidth system will allow
 - File a KDB identifying FCCID and Confirmation number and specify each line entry that needs FCC correction and exactly what the correction is



Questions and Answers

Thanks!