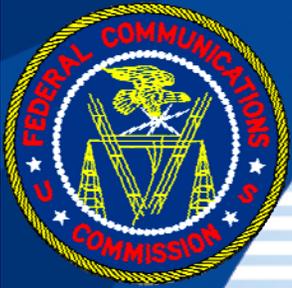




Subpart 90R 700 MHz Narrowbanding & Part 90 Narrowbanding (Update)

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Office of Engineering and Technology
Laboratory Division**



Subpart 90R - 700 MHz Public Safety Bands

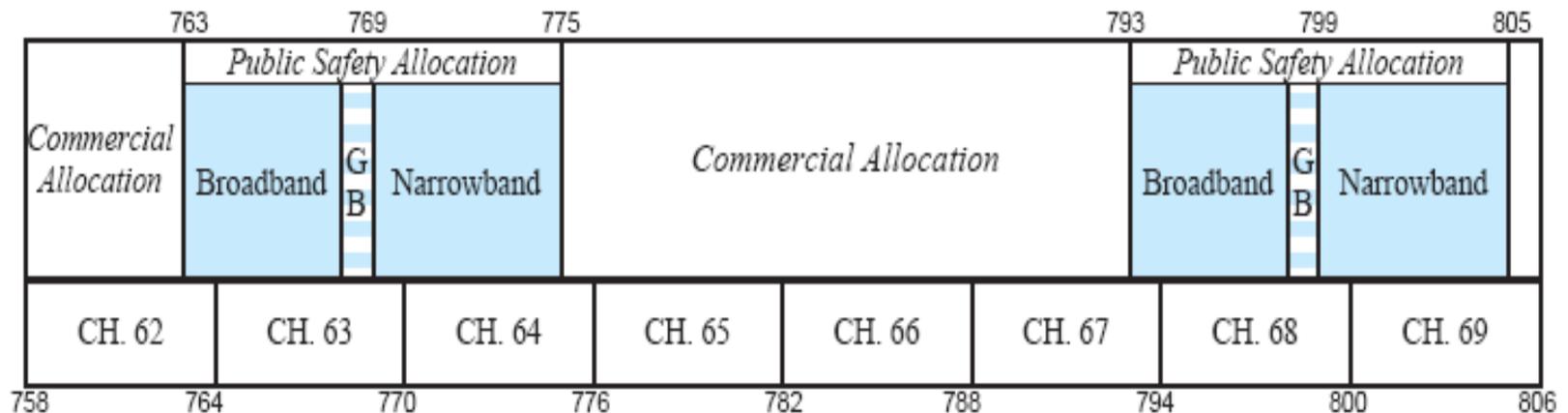
- 700 MHz band formerly allocated to broadcast TV (698-906 MHz)
- Second Report and Order FCC 07-132
 - http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-07-132A1.pdf
- Lower half of the 700 MHz public safety bands for broadband communications
- Consolidated existing narrowband allocations in the upper half of the public safety 700 MHz band



700 MHz Public Safety Bands

- Broadband segments
 - 763-768/793-798 MHz
- Narrowband Segments
 - 769-775/799-805 MHz
- Two 1 MHz Guard Bands

Revised 700 MHz Band Plan for Public Safety Services





Narrowband Segment Channels

- Detailed narrowband segment channel plan
 - <http://transition.fcc.gov/pshs/docs/public-safety-spectrum/700mhz-chart-segments.pdf>
 - Consists of 1920 6.25 kHz channels operating as 960 pairs
 - 7 distinct channel groups (Section 90.531(b))
<http://www.fcc.gov/encyclopedia/700-mhz-spectrum>
 - All channels 6.25 kHz BW
- Base: 769-775 MHz (Channels 1-960)
- Mobile: 799-805 MHz (Channels 961-1920)



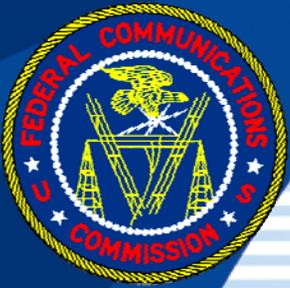
Narrowband Segment Modulation Requirements (Section 90.535)

- All devices must have digital modulation
- Mobile and portable devices can have an analog modulation on a secondary basis
- Exemption: Low Power devices
 - ERP < 2 Watts
 - Operation exclusively on low-power channels specified in Section 90.531(b)(5)



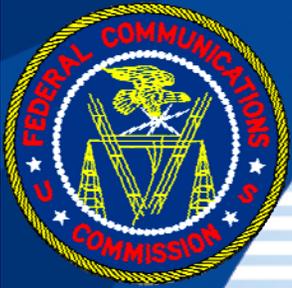
Narrowband Segment - Spectral Efficiency Requirements

- Minimum of 4.8 kbps per 6.25 kHz bandwidth
- Data must be non-voice (no-analog)
- Multi-bandwidth modes: Two or four channels can be combined (aggregated) per Section 90.531(d) to create 12.5 kHz or 25 kHz channels
 - 1) Two may be combined provided that the lower channel number is odd (e.g., 1, 3, 5)
 - 2) Four may be combined provide that the lower channel number is $1 + 4n$, $n = 0$ to 479 (e.g., 1, 5, 1917)
 - 3) Channel numbers for combined channels are designated by the lowest and highest channel numbers separated by a hyphen, e.g., "1-2" and "1-4".



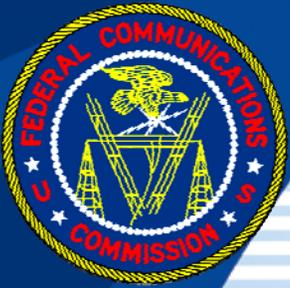
Narrowband Segment - Spectral Efficiency Requirements

- Single BW mode 6.25 kHz BW – no minimum data rate
- 12.5 kHz BW – minimum data rate
 - 9600 bps (2 X 4800 bps)
- 25 kHz BW – minimum data rate
 - Single emission rated at 4 x 4800 bps
 - Four individual but simultaneous emissions at 4800 bps per emission
- Interoperability
 - All interoperable channels required: Section 90.531(b)(1)(i)
 - All interoperable channels are required to meet the P25 standard: Section 90.535(c)



Narrowband Segment – Transition Dates

- After December 31, 2014 the marketing, manufacture, and importation of 12.5 kHz (analog) equipment is prohibited
- After December 31, 2012 all 12.5 kHz applications must be dual mode devices or meet the spectral efficiency requirements
- After December 31, 2014 all applications must meet the spectral efficiency requirements
- Note: Section 90.535(c) was rendered obsolete by FCC 07-132. It still appears in the Rules due to a misprint.



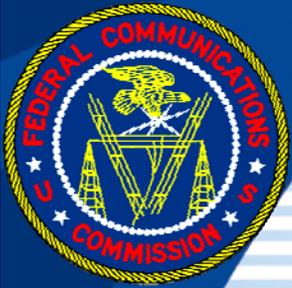
Part 90 Narrowbanding (KDB 579009) Update

- Exclusion List (KDB 628591) – Part 90 Narrowbanding (Paragraph (1)(i)) is being removed and will be added to the PBA List (KDB 388624)
 - Effective June 1, 2012
- Documentation required to show compliance with spectral efficiency requirements for $BW > 6.25$ kHz which must be submitted with the TCB filing for PBA
 - Operational description describing the device function and modes of operation
 - Explanation of how spectral efficiency requirements are met
 - Attestation statement of compliance with spectral efficiency requirements
- The Form 731 filing will require selection of specific rule sections: 90.203(j)(4), (5), (7) or (8)



T-Band (470-512 MHz) – Public Safety Pool

- Middle Class Tax Relief and Job Creation Act of 2012 (H.R. 3630) reallocates the T-band for auction within the next 9 years
- T-Band Wide-Band Waiver to be issued shortly
 - PSHSB preliminary announcement:
The order also will permit equipment manufacturers to produce and sell wideband equipment for T band licensees. Equipment makers currently face a Jan. 1, 2013, deadline for no longer making or importing such equipment.
- FCC will revise KDB guidance once the final waiver is issued.



Questions and Answers

Thanks!