



Frequencies and Rule Parts Listed on Grants – KDB 634817 Updates

Office of Engineering and Technology
Laboratory Division



Overview

- Updated KDB Publication 634817 published 10/10/2014 – now has two attachments:
 - D01 v04 Frequency Range Listings For Certification Grants
 - D02 v01 Background Based on §§ 2.105 and 2.106, and Other Frequency Listings Considerations
- Change highlights:
 - Part 15 multiple-bandwidths device provision updated
 - Signal boosters amended at II(e)(1) [KDB 935210 D02]
 - Sec. III added about grant listings for multiple emission/channel bandwidths per transmit band
 - Appendix A of the preceding D01 v03 is deleted from D01 and relocated and updated to be new 634817 D02
 - Example part 90 bandplan graphs in new 634817 D02



Multi-bandwidth Part 15 Devices

- Example in Appendix to 634817 D01 v04
 - List highest and lowest center frequencies for narrowest bandwidth mode
 - Do not list TDWR band (i.e., 5600-5650 MHz) for applications filed under old DFS rules
 - 802.11 devices with 20 MHz bandwidth mode means channels 120, 124, and 128 are blocked
 - List highest measured output power among all bandwidth modes per band
- Example 802.11 device listing snapshot is shown; also grant remarks field shall state “This device has 20, 40, and 80 MHz BW modes” (when applicable)

<u>Grant Notes</u>	<u>FCC Rule Parts</u>	<u>Frequency Range (MHZ)</u>
CC MO	15E	5180 - 5240
CC MO ND	15E	5260 - 5320
CC MO ND	15E	5500 - 5580
CC MO ND	15E	5660 - 5700



Reduced Line Count–LTE Devices

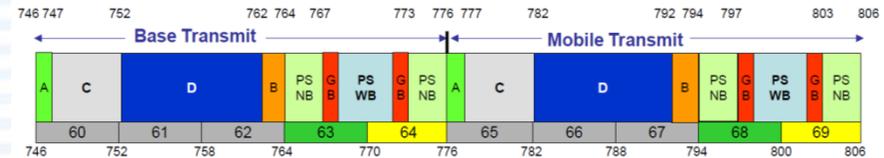
- For grants of devices operating in 3GPP LTE modes, listing only the widest measured emission bandwidth for each emission designator and each transmit band is allowed per the following:
 - One line per mode and band is allowed if result with the widest measured emission bandwidth also has the highest measured output power
 - Multiple Form-731 lines per band are needed if the result with the widest measured emission bandwidth does not have the highest measured output power:
 - List each of the widest emission bandwidth result(s) with associated measured output power(s), and
 - List highest measured output power result with its associated measured narrower emission bandwidth
- When using widest-bandwidth reduced line-count approach, filing must still contain test results and explicit descriptions of lesser bandwidth operating modes
- This listing consolidation scheme initially applies for LTE devices (3GPP Rel. 8 and higher) only
 - Please submit pre-grant KDB inquiry if use for other device types is requested



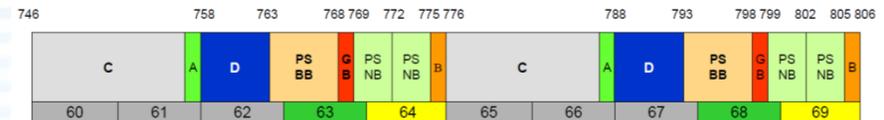
Basic Part 90 Frequencies

F _L (MHz)	F _H (MHz)	Rule(s)
25	50	90 (selected bands)
72	76	90 (selected bands)
136	150	Not available under 90 subparts B, C land mobile service
150	150.05	Federal (non-FCC)
150.05	150.8	§ 90.265
150.8	162.0125	90
162.0125	173.2	§ 90.265
173.2	173.4	90
173.4	174	Federal (non-FCC)
406.1	420	§ 90.265
420	421	ULS presently shows no licensees for 420-420.9 MHz
421	430	90
430	450	Not available under 90 subparts B, C land mobile service
450	470	90 (selected bands)
470	512	90
758	768	90-R, Public Safety (PS) Broadband (FirstNet)
768	769	PS Guardband
769	775	PS Narrowband
788	798	90-R, Public Safety (PS) Broadband (FirstNet)
798	799	PS Guardband
799	805	PS Narrowband
806	809	90 NPSPAC
809	815	90 Interleaved PS; B/ILT; SMR [§ 90.614(a); § 90.613 ch. nos. 1-470]
815	816	90 Expansion B/ILT; SMR [§ 90.614(a); § 90.613 ch. nos. 470-550]
816	817	90 Guardband
817	824	CMRS 90 ESMR [§ 90.614(b); § 90.613 ch. nos. 551-830]
851	854	90 NPSPAC
854	860	90 Interleaved PS; B/ILT; SMR [§ 90.614(a); § 90.613 ch. nos. 1-470]
860	861	90 Expansion B/ILT; SMR [§ 90.614(a); § 90.613 ch. nos. 470-550]
861	862	90 Guardband
862	869	CMRS 90 ESMR [§ 90.614(b); § 90.613 ch. nos. 551-830]
935	940	90 Interleaved

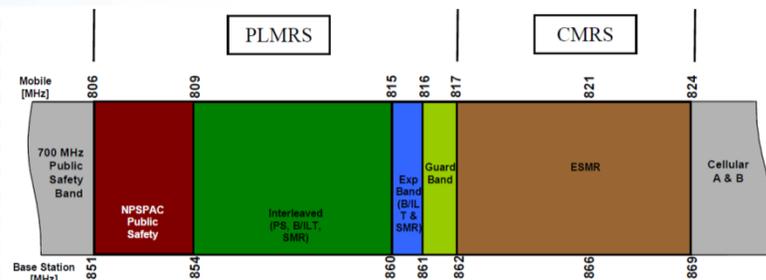
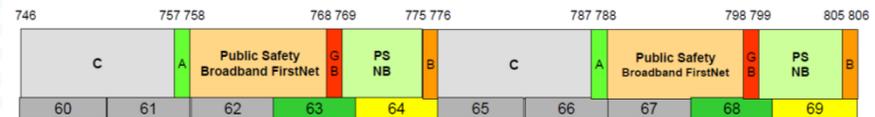
FCC-98-191, etc. (obsolete; service rules not in CFR)



FCC-07-132 (obsolete; service rules not in CFR)



DA-12-1462 allocation; FCC-13-137 PS BB service rules



- Use as general and specific guide for Part 90 allocated and licensable frequencies
- Use also KDB Pubs. 579009 (refarming), 149672 (multi-rule devices)



Line-entry Examples

Table 1—Example unclear frequency and rule part listings

#	Example FCC-731A line-entry excerpts			Issues
1	<u>Grant Notes</u>	<u>FCC Rule Parts</u> 90	<u>Frequency Range (MHZ)</u> 136-144	2.106 does not list 90; 136-144 is not listed in 90.20(c)(3), 90.35(b)(3) available channels, nor elsewhere in 90.
2	<u>Grant Notes</u> EF	<u>FCC Rule Parts</u> 90	<u>Frequency Range (MHZ)</u> 136-144	EF note applies only when a span is contiguous with and extending into an adjacent 2.106 part 90 allocation, but next 90 above this is 150.8 MHz; remarks of 1 also apply.
3	<u>Grant Notes</u> EF	<u>FCC Rule Parts</u> 90	<u>Frequency Range (MHZ)</u> 809-849	824-849 is not listed in 90, thus per 2.105(e) it is not available and not to be listed for 90 operations; 824-849 falls in 22.905, with applicable technical rules defined in 22H.
4	<u>Grant Notes</u>	<u>FCC Rule Parts</u> 90	<u>Frequency Range (MHZ)</u> 450-470	Not allocated or licensable under 90 for all frequencies in the span; encompasses e.g., 95A and 95B with different technical rules, therefore needs split lines or EF note code and letter exhibit.



Wrap-up

Following pages are backup material,
other background, and/or for reference



Multi-bandwidth Part 15 Devices

- Sec. I (d): underline & strikethrough shows clarifications:
 - For devices capable of operating with multiple emission bandwidths in modes and/or channels based on IEEE Std 802.11 and/or its amendments, list the frequencies for the bandwidth that has the center frequencies closest to the band edges.
 - The Form-731 grant condition field should include a statement listing ~~the various~~ all bandwidth modes of operation (e.g., “This device has 20 MHz and 40 MHz bandwidth modes.”)
- Appendix to 634817 D01 v04 has example



Licensed Devices – General

- For other than part 15 transmitters, a grant of certification demonstrates device acceptability for licensing and operation in U.S. non-Federal radio services
- Equipment grants generally are valid based on the representations and test data in the filing [§§ 2.907(a), 2.911(b), 2.915(a)(1), 2.927(b)]
- To identify scope of a grant, frequencies available for FCC licensed operations should be identified and reflected by listings on the FCC-731A form and in the filing contents

This text is simple review of fundamentals; inserted 634817 D01 v03 May 2014.



KDB 634817 D02 – Other Freq. Info

- Frequencies Listed in Service Rules Take Precedent Over § 2.106 Table [paraphrase of § 2.105(e)]
 - If frequencies are allocated for a service type in the “Non-Federal Table” column, then a cross reference for the pertinent FCC rule part MIGHT be listed in the § 2.106 table rightmost column
 - FCC rule part(s) in the rightmost column are provided for info only but are not allocations
 - Exact use allowed for any frequencies is per service rule(s) listings
- Empty Rightmost Column in § 2.106 Table Means FCC Operations Not Defined [paraphrase of § 2.105(d)(1)]
 - If no radio service or relevant footnote is listed in the “Non-Federal Table” column for a band, then FCC licensing and equipment authorization generally are not available for that band (except per § 2.102)
 - Form-731 listing requires appropriate specific justifications in the filing

This text is simple review of fundamentals; inserted 634817 D01 v03 May 2014.