Federal Communications Commission
Office of Engineering and Technology
Laboratory Division

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FREQUENCY RANGE LISTINGS FOR CERTIFICATION GRANTS

I. PART 15 UNLICENSED TRANSMITTERS

(a) Frequency ranges for unlicensed devices must agree with the Part 15 rule section and paragraph applied under.

(b) Do not list restricted bands of § 15.205 except for certain devices as allowed in § 15.205(b). For example, UWB devices may operate in restricted bands.

(c) List the center frequency of the lowest channel tested to the center frequency of the highest channel tested for the following operating modes which produce worst-case RF emission characteristics:

(1) the widest frequency range

(2) the highest power

(d) 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 all bandwidth modes of operation (e.g., "This device has 20 MHz and 40 MHz bandwidth modes.")

(e) New U-NII rules established in Docket No. 13-49 (FCC 14-30) are effective from June 2, 2014.

(1) KDB 926956 provides more details about applicable rules on transition period established for the rules.[1]

(2) For U-NII devices operating under the old rules in the 5470-5725 MHz band, do not list frequencies that include the TDWR band (5600-5650 MHz), in accordance with the provisions of KDB Publication 443999. Only devices approved under the new rules may list the frequencies if compliance is demonstrated with the new procedures.

II. LICENSED TRANSMITTERS – GENERAL GUIDANCE

For transmitters other than part 15, an FCC equipment authorization certification grant signifies that a device is acceptable for licensing and operation in U.S. non-Federal radio services. Equipment grants are valid based on representations and test data contained in an application filing [§§ 2.907(a), 2.911(b), 2.915(a)(1), 2.927(b)].

For clarifying its scope the frequencies available for licensed operations at the time of an equipment grant should be identified and reflected by the FCC-731A listings and the contents of an equipment

[1] Refer also to KDB Publications 789033 and 905462 for the appropriate procedures and guidance to be used for demonstrating compliance with the rules in effect prior to June 2, 2014 and after that date.

authorization, in terms of the § 2.106 spectrum allocations as well as the radio service rule blocks and channels available for the type of station equipment.

The following provisions are to be used when listing contiguous outside-rule frequencies that extend above or below a licensed service spectrum block, and for Form 731 lines having outside-rule frequencies interleaved between available spectrum blocks (see examples in KDB Publication 634817 D02).

The frequencies used in EMC/radio parameters testing and RF exposure evaluations must include allocated and licensable frequencies under the applicable service rule. Supporting information and operating descriptions must be clear and consistent across an application about device frequency capabilities, frequencies tested, and frequencies available for subsequent FCC licensed operations.

The following provisions are applicable for any Form 731 line entry containing frequencies that are not allocated or licensable (without waiver) under the rule part(s) listed.[2] Generally, each Form 731 line should list only allowed frequencies in rule part applied under. However, contiguous frequency ranges that extend allowed frequencies, and include adjacent frequencies outside the rule part applied under, are allowed under the following conditions **II(a)** to **II(h).** All of the following conditions must be adhered to.

(a) Extended frequency ranges in the line item must have a portion of the band fall within the operating range of the rule part(s) listed. The rule parts applied under and the allocation chart in § 2.106 are used to check for allowed frequencies for the rule part applied under.

(b) Frequency range and rule part combinations outside U.S. non-Federal allocations and not consistent with appropriate FCC rule parts are not allowed. The device must be capable of operating on frequencies in the frequency band listed.

(c) For a multiple rule part line item, tighter specifications must apply where frequency ranges are common between rule parts.[2]

(d) The filing must have a justification letter for the use of extended frequencies outside of the rule part applied under. The justification letter must indicate the authority for use of the extended frequencies and marketing restrictions.

(1) Examples of authorized use for extended frequencies.

(i) A waiver of the rules. Provide a copy of the waiver.

(ii) § 2.103 Federal use of non-federal frequencies.

(iii) Use in other countries. Indicate the ITU Region shown in § 2.104.

(2) Contiguous frequency listings for covering and reducing multiple listings that include frequencies that are not listed in the rule part applied under, or not described for authorized use in items II(d)(1)(i) to II(d)(1)(iii), are acceptable if the filing is accompanied by an attestation letter from the grantee acknowledging that the device will be programmed only for the frequencies authorized in item d or allowed by the rule parts applied under. This attestation letter must list the authorized use and the exact frequencies allowed for each rule part applied under, ensuring understanding and compliance with the rules and correct programming of the device. As an alternative to listing the exact frequencies, the grantee may provide an additional statement acknowledging that the FCC rules are violated if the device operates on unauthorized frequencies.

[2] See also KDB Publication 149672 for policies and procedures about multiple-rule Form 731 line entries.

(e) Frequencies must adhere to the following additional restrictions.

(1) Extended frequencies are not allowed for the following devices:

(i) Part 87 devices,

(ii) CMRS subscriber devices under Parts 22, 24, 27, 90 (ESMR),

(iii) Devices licensed by rule, such as FRS, GMRS, VHF marine handheld, and MURS,

(iv) Signal boosters subject to § 20.21 or 90.219.[3]

(2) A device must not be capable of operating in the 406-406.1 MHz band, unless the rule part applied under specifically allows it.

(i) 406-406.1 MHz listing is permitted only for equipment operating under part 80 subpart V, part 87 subpart F (§§ 87.193 to 87.199), part 95 subpart K.

(ii) 406-406.1 MHz listing is not permitted for any other rule parts, e.g., including part 90.

(iii) Neither the contiguous frequency listing provision of II(d)(2), nor the EF grant note code of II(g)(1), may be used for listing 406-406.1 MHz on grants.

(f) Test guidance.

(1) Test only on the allowed frequencies.

(2) Test at least one frequency in each band for each rule part applied under and ensure the device is capable of operating on the frequency under each rule part. This requirement may result in testing on multiple frequencies. Testing on one frequency may be acceptable if multiple listed bands for a rule part with a continuous frequency range are split to remove a conflict with other rules and the technical requirements in the split bands are the same. Additional requirements for RF exposure may apply.

(g) FCC-731A grant comments.

(1) All certification grants with extended frequencies must have the following grant note code:
EF - This device may contain functions that are not operational in U.S. Territories except as noted in the filing. This grant has extended frequencies as noted in the filing and Section 2.927(b) applies to this authorization.

(2) For CMRS subscriber devices under Parts 22, 24, 27, 90 (ESMR) containing non-U.S. mobile service bands, please ensure that the filing gives general description of the non-U.S. modes capabilities. Grant comment:
"This device contains functions that are not operational in U.S. Territories; this filing is only applicable for U.S. operations."

(h) Where extended frequencies of operation in a device are controlled by software configuration, provide the technical description for software configuration control discussed in KDB Publication 594280. The description must clearly explain how the control is maintained so that the device operates only on authorized frequencies.

[3] See also Clause II of KDB Publication 935210 D02.

III. CONSIDERATIONS ON FORM-731 LINE COUNT FOR DEVICES WITH MULTIPLE CHANNEL BANDWIDTHS, MULTIPLE EMISSION TYPES, AND MULTIPLE BANDS

(a) For grants of devices operating in 3GPP LTE and or 5G modes, listing only the widest measured emission bandwidth for each emission designator (e.g. G7W) and each transmit band [e.g., 27 subpart L (AWS-1)] is permitted according to the following provisions.

(1) If the mode with the widest measured emission bandwidth also has the highest measured output power, the Form-731 can have a single line per mode and band;

(2) If the mode with the widest measured emission bandwidth does not have the highest measured output power, then multiple Form-731 lines per band are needed for the widest emission bandwidth mode(s) with associated measured output power(s), and the highest measured output power mode with its associated measured narrower emission bandwidth.

(3) When this reduced line-count approach is used in filings, to be considered as authorized all lesser bandwidth operating modes must be specifically tested and explicitly described within the application exhibits.

(4) Until further information is available about other device types if any having large numbers of modes, bands, and bandwidths leading to many grant lines, this listing consolidation scheme applies only for LTE and or 5G devices (3GPP Rel. 8 and or Rel 15 or higher as applicable).

(b) For devices subject to part 90 PLMRS narrowband/re-farming requirements in 150-174 MHz and/or 406-512 MHz, please see the guidance provided in KDB Publication 579009.

IV. RELATED KDB PUBLICATION NUMBERS AND TITLES

- KDB Publication 149672, Transmitter Devices Certified Under Multiple Rule Parts (D01)
- KDB Publication 443999, Interim Plans to Approve UNII Devices Operating in the 5470 - 5725 MHz Band with Radar Detection and DFS Capabilities (D01)
- KDB Publication 579009, Re-farming Part 90 frequencies
- KDB Publication 594280, Restrictions on Software Configuration for devices not approved as Software Defined Radios (D01)
- KDB Publication 789033, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E (D01)
- KDB Publication 905462, What is the test procedure for a UNII device with DFS capabilities?
- KDB Publication 926956, U-NII Devices Transition Plan (D01)
- KDB Publication 935210, Signal Boosters Certification Requirements (D02)

APPENDIX

U-NII DEVICE EXAMPLE GRANT FREQUENCY LISTING

Section I of KDB Publication 634817 D01 states the present grant frequency policy. The policy states that the highest and lowest center frequencies for the narrowest bandwidth mode are listed. For applications filed under the old DFS rules, do not list the TDWR band (i.e., 5600-5650 MHz). For 802.11 devices with 20 MHz bandwidth mode, channels 120, 124, and 128 are blocked. The power listed is the highest power among all the bandwidth modes across the band.

The following is an example for an 802.11ac device operating in all U-NII bands under the old rules. Note that the TDWR band is blocked.

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts
CC MO	15E	5180 - 5240	0.048
CC MO ND	15E	5260 - 5320	0.093
CC MO ND	15E	5500 - 5580	0.084
CC MO ND	15E	5660 - 5700	0.086

The grant condition field should state: This device has 20, 40, and 80 MHz BW modes.

Change Notice

10/10/2014 634817 D01 Freq Range Listing for Grants v03 is replaced by 634817 D01 Freq Range Listing for Grants v04. Changes include:

- Part 15 multiple-bandwidths device provision is updated.
- Signal boosters amended at II(e).
- III added about grant listings for multiple emission/channel bandwidths per transmit band.
- Appendix A of D01 v03 is deleted from D01 and relocated and updated to be new 634817 D02.

12/18/2015 634817 D01 Freq Range Listing for Grants v04 has been replaced by 634817 D01 Freq Range Listing for Grants v04r1. Changes include:

- Provisions updated for 406-406.1 MHz listings.

10/25/2022 634817 D01 Freq Range Listing for Grants v04r01 has been replaced by 634817 D01 Freq Range Listing for Grants v04r2. Added to section III. 731 LINE COUNT multiple channels. Bandwidths, emission types & bands to include 5G.