Federal Communications Commission
Office of Engineering and Technology
Laboratory Division

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PERMISSIVE CHANGE POLICY

I. GENERAL

The permissive change rules in § 2.1043 describes the modifications that may be made to an RF device without filing for a new equipment authorization; defines the three different types of permissive changes; and identifies when a permissive change filing with the Commission is required.[1] Note that changes to the basic frequency determining and stabilizing circuitry (including clock and data rates), frequency multiplication stages, basic modulator circuit or maximum power or field strength ratings will always require a new grant of certification (FCC ID) and a new equipment authorization application.[2]

KDB Publication 178919 D01 (this document) describes general permissive change policies – other more specific policies may be described in related documents. KDB Publication 178919 D02 provides additional guidance on various permissive change considerations in question and answer format. Permissive change policies are addressed in this document as they apply to the following categories:

- Antenna changes
- Printed Circuit Board (PCB) and Hardware changes
- Enclosure changes
- Software changes
- RF exposure considerations
- Miscellaneous changes

A. When a device is modified, all proposed changes must be considered to determine the type of filing required. For example, a software change to add additional frequencies may be authorized by a permissive change; however, if the power in the new frequency band increases, then § 2.1043 requires a new equipment grant of certification (new FCC ID) except as discussed in V) G) below.

B. When a Class II permissive change is filed for either EMC or RF exposure purposes, an EMC test report or RF exposure evaluation is required, regardless of whether EMC or the RF exposure levels are degraded.[3]

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[1] FCC Order (FCC 14-208) adopted December 14, 2014 discontinued the direct processing of applications for equipment certification and permissive changes by the FCC and instead now requires all applications be processed through TCBs. The new rules also require all testing for equipment certification and permissive changes to be performed by a FCC-recognized accredited testing laboratory. See §§ 2.907 and 2.932.

[2] With some exceptions as noted later in this publication – see V) G).

[3] Degradation for EMC parameters:

- Any increase in the fundamental emission for output power rated devices is considered degradation. § 2.1043 does not allow an increase in maximum output power rating without application for equipment authorization under a new grant of certification (new FCC ID).
- Spurious emissions – an increase of up to 3 dB from the original authorization is allowed, if the emission level is compliant.

C. Guidance for permissive change policies for Hearing Aid Compatibility (HAC) is contained in KDB Publication 285076 (Equipment Authorization Guidance for Hearing Aid Compatibility).

II. ANTENNA CHANGES

A. Part 15 equivalent-type antennas:

1) For Part 15 certification applications, include a list of all antennas approved for use with the transmitter and photographs for each of the antennas.[4] The antenna type(s), gain, model number and manufacturer are included in the list.

2) Additional antennas that are equivalent may be substituted, and then marketed without a Class II permissive change, with the following exceptions:

   a) Unlicensed Personal Communications Service Devices (Part 15 Subpart D) – the lowest gain antenna is needed for detecting lowest energy above the noise floor, in addition to the highest gain of each type. The addition of a lower gain antenna requires a Class II permissive change.

   b) U-NII devices – the lowest gain antenna, in addition to the highest gain of each type, is needed because the lowest gain results in worst case radar reception. The addition of a lower gain antenna, of the type currently authorized or not, requires a Class II permissive change.

   c) For ultra-wideband (UWB) devices, all antennas affect emissions so all antennas need to be tested. The addition of an antenna requires a Class II permissive change.

   d) Transmitters subject to radiated power density limits, and operating at or near the maximum power density level may need to reduce EIRP with lower gain antennas. This applies to conditions when the radiated power density (e.g., in dBm/MHz or W/m^2) is higher for lower gain antennas with less antenna surface area operating at the same EIRP levels – an evaluation is required to determine if a Class I or Class II permissive change is applicable.

   e) For transmitters with antennas operating in portable exposure conditions, see VI) B) 3) below.

   f) Transmitters subject to a vertical fundamental frequency radiation limit above the horizon (e.g., EIRP for certain U-NII devices in § 15.407(a)(1)(i) or attenuation for UWB devices in § 15.515(d)). Any change in antenna pattern, antenna type or installation that results in an increase in the reported vertical radiation level requires a Class II permissive change.

3) Equivalent antennas must be of the same type (e.g., yagi, dish, etc.), must be of equal or less gain than an antenna previously authorized under the same grant of certification (FCC ID), and must have similar in-band and out-of-band characteristics (consult specification sheet for cutoff frequencies).

   Any new antenna type, or higher gain antenna, approved under Part 15 requires a Class II permissive change, and the requirements of § 15.203 must be met.

[4] §§ 15.204(c)(3), 2.1033(b)(4), 2.1033(b)(7). Recall also that per § 15.204(b) all Part 15 intentional radiators must be marketed with at least one antenna, except in certain situations such as where a filing has justified professional installation (§ 15.203).

B. Antenna replacement for licensed service transmitters.

1) Antenna changes may be made without an authorization request, if adherence to the grant conditions for RF exposure compliance and applicable maximum ERP/EIRP rules are observed. Otherwise, an equipment authorization application is required.

2) An integral antenna requirement (e.g., GMRS, FRS transmitters, etc.) means that the antenna is not user replaceable, or is not removable.

III. PRINTED CIRCUIT BOARD (PCB) OR HARDWARE CHANGES

A. Changes described in § 2.1043(a) that result in a non-electrically equivalent device require a new grant of certification (FCC ID).

B. Depopulated versions of a transmitter require authorization under separate FCC IDs for each version.

C. Versions of a device with different integral active hardware components (e.g., amplifiers and crystals) that result in different radio parameters (e.g., output power, frequency), or that result in the device not being electrically identical, require authorization under a different grant of certification (FCC ID) for each version. Such changes are NOT considered electrically identical.[5] For example, versions of a device with different internal filter designs that operate on different frequencies must be filed under different certification grants (FCC IDs).

D. Part substitution – electrically identical parts may be substituted. An initial evaluation of test results will determine if a Class I or Class II permissive change application is required. A chip replacement of a portion of the transmitter that performs some sub-function such as an amplifier chip, oscillator chip, or frequency determining chip, may be considered a Class II permissive change under the following conditions; however, replacement of a chip that constitutes a complete transmitter shall require a new grant of certification (FCC ID):

1) The new chip component is pin-for-pin compatible.

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[5] Electrically identical device considerations:

- For Part 95 devices (i.e., Part 95 Subpart C) the FCC does not allow device designs that permit end-users to change plug-in crystals. When the plug-in crystal is only changed by the original equipment manufacturer, the grantee may receive authorization for multiple crystals under one grant of certification (FCC ID). Historically, this has not been considered a design change for Part 95 devices, as the change involves exchanging one crystal for another. A permissive change request for a new crystal(s) is acceptable if the new crystal does not cause the frequency range to exceed that granted in the original authorization. A new FCC ID is required if the new crystal causes the device to exceed the frequency range approved in the original authorization.
- If the transmitter PCB board and enclosure remains the same, external or internal mechanical passive filters for a transmitter may be approved under one grant of certification (FCC ID) and/or can be added with a Class II permissive change even if the mechanical passive filters result in different frequency bands of operation. If the change in these filters result in a reduced frequency band from the original grant and all emissions have not been degraded, a Class 1 permissive change is acceptable.
- Part 74 and Part 90 wireless microphones – Minor differences in passive components (resistor or capacitor) for internal circuitry is allowed in an original application for authorization, but not in a permissive change application.

2) The new chip has the same basic function as the old chip, from an external perspective (internal circuitry may differ).

3) No change in radio parameters has occurred.

4) The same conditions apply when a small area (approximately the same area as the chip) of the PCB is replaced with an equivalent chip.

E. Considerations on transmitter amplifier changes.

1) Adding or subtracting an on-board amplifier component requires a new grant of certification (FCC ID), except when substituting an amplifier part, as provided for in III) D).

2) Transmitters may not be modified and approved with a permissive change if an integral amplifier is added or removed. Transmitters with and without an integral amplifier require two equipment authorization applications, with two FCC IDs.

3) Transmitters used optionally with or without an external amplifier.[6]

a) Authorization under a single grant of certification (FCC ID) has been allowed for some types of transmitters used with and without an external amplifier, for example CMRS base-station transmission systems, when approved in the original authorization.[7]

b) For an existing FCC ID transmitter approved without an optional amplifier, adding an external amplifier under the transmitter FCC ID is not allowed with a permissive change. A new equipment authorization application with a new FCC ID is required to add an external amplifier.

F. Minor circuitry for non-transmitter portions (such as receiver, peripheral circuits, or some other digital function) can be changed or depopulated, and may be approved under one FCC ID. For example, a base station for a cordless phone with or without a digital display (for an answering machine function) may be approved under the same FCC ID. Significant depopulation usually requires a separate FCC ID, because the devices are not electrically identical. See §§ 2.908 and 2.933(b).[8]

IV. ENCLOSURE CHANGES

A. For devices not approved as modules, only minor changes to an enclosure are allowed with a permissive change. If the basic functionality and intended usage are not the same, a new grant of

[6] Per §§ 2.815 and 15.204(a), the general definition of external amplifier is any device which is not an integral part of an intentional radiator or radio transmitter as manufactured and which, when used in conjunction with an intentional radiator or radio transmitter as a signal source, is capable of amplifying that signal.

[7] A KDB inquiry should be submitted for guidance on FCC ID labeling where the separate enclosures in a transmission system are not electrically identical.

[8] In cases where models with minor variations are planned, the original application filing must include the description of variations and test data for the different configurations to ensure compliance in all modes. A KDB inquiry should be submitted if there are questions on permissible variations.

certification (FCC ID) is required. For example, approval of a desktop and tower computer under the same FCC ID, or a laptop and desktop under the same FCC ID, is not permissible.

B. A certified transmitter not approved as a modular device under the FCC rules may be placed or inserted into another host as either a stand-alone or plug-in transmitter, if it is accessible by the end-user or field technician and the FCC ID is visible from the outside, or visible without difficulty, when the transmitter is accessed. Further approval is not required if there are no modifications or physical changes to the transmitter and housing, only antennas approved by the manufacturer are used and all other FCC grant conditions and usage configurations are properly followed.

C. For example, a certified wireless modem card (e.g., PCI form factor) with a manufacturer approved antenna may be inserted into a typical personal computer; or an access point may be placed inside an equipment cabinet. Access to the transmitter must use common enclosure access methods so that end-users or installers do not require any special tools except for simple screw drivers, snap open covers or lock keys to access, remove and replace the transmitter. In cases where the non-modular transmitter is not end-user accessible and replaceable, the entire enclosure or device must receive a new authorization.

D. See also KDB Publication 996369 for further guidance on permissive changes for devices approved as modules.

V. SOFTWARE CHANGES

A. For devices not approved as Software Defined Radios (SDR), limited changes are permitted with software changes as Class I or Class II as discussed below. When changes are incorporated by software, the technical description must clearly explain what controls are implemented to prevent third-parties or unauthorized parties from making modifications to the transmitter to enable operation outside the conditions of the grant of authorization.

B. Additional frequencies may be added by a Class II permissive change to an approved device under the following conditions. A new test report demonstrating compliance must always be submitted for the new frequencies of operation.

1) No hardware changes have been made.

2) There is no increase in the output power rating on new frequencies (unless such exceptions are permitted by rules or KDB publications – see V) G)).

3) The Equipment Class remains the same. (Changes that require a new Equipment Class code require a new grant of certification (FCC ID), except for SDR approvals.)

4) RF exposure changes must be addressed.

5) Only the original equipment manufacturer may implement the new frequencies.

6) There are no other changes to the device that indicate a need for a new FCC ID.

C. Frequency band capability of the device is decreased. If there are no other radio parameter changes to the radiated and conducted output power of the device or any grant parameter including EMC, HAC, and SAR ratings due to the decreased frequency:

1) Then the change is permitted under a Class I change procedure. If subsequently the frequency band of operation is increased to the original grant condition this is also permitted under Class I change procedures. This can be enabled through remote software downloads controlled by the grantee.

2) If the applicant desires to change the grant frequency range listed on the grant, then a Class II permissive change procedure is required.

D. Third party activation of software changes for any radio parameter such as new frequencies, output power, and/or modulations, or changes that modify the circumstances under which the transmitter is approved to operate, are not allowed unless the device was approved as a software defined radio (SDR).[9] (Class III permissive change rules for software defined radios are in § 2.1043(b)(3).) A third party is anyone except the grantee; such third parties include end-users, service providers, operating system providers, application developers, Original Equipment Manufacturer(s) (OEM) installers, professional installers or authorized service dealers. Only the following exceptions are permitted.

1) For professionally installed equipment, the professional installer may adjust the output power so that radiated power is within the grant authorization for the authorized antenna and cable configurations. A third party must not have the ability to adjust the radio parameters of the device through country code settings or other software configuration controls if the device has the ability to operate out of compliance with the FCC technical requirements or the conditions of the grant of authorization of the transmitters. See KDB Publication 594280 for further guidance.

2) Only authorized dealers under a contractual agreement with the grantee may make authorized radio parameter changes. The grantee must attest to such contractual agreements in the filings associated with application. Any such changes must be made only to newly manufactured or sold devices and not to the devices already deployed.

3) The Commission will allow the grantee to permit certain parties to enable software upgrades to devices deployed in the field. The grantee may permit parties with whom it has contractual agreements. Specific third parties such as operating systems providers or service providers who exercise control over the software configuration of the transmitter or specific customers who have controlled access to its servers. The grantee must provide the details of such arrangements in either the original filing or a Class II permissive change filing and is subject to Pre-Approval Guidance processing by a TCB.[10] The filing must include:

a) Brief description of the arrangement between parties,

[9] § 2.944(b) requires any radio in which the software is designed or expected to be modified by a party other than the manufacturer and would affect the operating parameters of frequency range, modulation type or maximum output power, or the circumstances under which the transmitter operates in accordance with the Commission rules must comply with the requirements for software defined radios. Depending on the circumstances the Commission may permit some third-party modifications.

[10] TCBs may process such applications using the Pre-Approval Guidance procedures (see KDB Publication 388624).

b) Software control process used by the parties (including the grantee and specific third-parties) to ensure that reasonable safeguards are in place to ensure that the device cannot be modified by unauthorized parties,

c) An attestation from the grantee indicating that they continue to be the responsible party to ensure compliance.

E. Adding new line items on the Form 731 is allowed under a Class II permissive change. Similarly, it may be necessary to add new emission designators or equipment classes as a result of rule changes.[11] All such changes must be performed by software only. Additional data rates (both higher and lower rates) under existing modulations that are consistent with a Form 731 line item / emission designator may be either a Class I or Class II permissive change, depending on emissions. A Class II permissive change is required if degradation occurs; if no degradation occurs a Class I permissive change is acceptable.

F. A Class II permissive change for a device with a decrease in output power, or with a different field strength, is allowed under the following conditions:

1) The maximum output power rating of the original authorization does not change.

2) There is no design change that increases or decreases the output power. A decrease in the power setting configuration is acceptable.

3) In no case, may a power limit be exceeded.

G. An increase in maximum output power requires a new grant of certification (FCC ID) per § 2.1043. This includes an increase in conducted output power and/or radiated power listed on the grant. However, if a Class II permissive change is to add a new frequency band subject to new technical requirements (i.e., in the case of a change in the FCC rules), an increase in power is permitted subject to the new technical requirements as long as such changes are performed by software and do not require any hardware changes. For instance, a Class II permissive change to allow a U-NII device to operate in a newly defined U-NII frequency band, subject to a higher output power limit, is acceptable (§ 15.407), or adding new frequency bands of operation to wireless microphones operating under Part 74 rules.[12] The filing for equipment authorization must include a complete test report demonstrating compliance with the new rules. The filing may also require a change in equipment class associated with the new rules.

VI. PERMISSIVE CHANGES AND RF EXPOSURE CONSIDERATIONS [13]

A. Class II permissive change filings that require RF exposure evaluation must ensure that the devices are tested according to appropriate KDB publication guidance. Test results for the device and

[11] The filing system procedure for adding a new equipment class to an existing FCC ID is described in KDB Publication 178919 D02.

[12] Equipment authorization and operational requirements for wireless microphones that operate under Parts 15, 74, and 90 of the FCC rules are outlined in the Report and Order documents FCC 15-99 and FCC 15-100.

[13] For additional guidance on permissive changes with RF exposure considerations see the published RF exposure KDB procedures. Also see KDB Publication 447498 for guidance on published RF exposure procedures used in original FCC ID applications.

evaluation configurations corresponding to the highest RF exposure condition reported in previous authorizations under the FCC ID should be considered to determine if Class I or Class II is applicable.

B. For portable devices, RF exposure evaluation requirements for Class II permissive change are based on the following:

1) Comparison of the highest measured SAR among all the configurations tested for each operating condition (i.e., next to the ear and worn on the body) obtained for the original authorization, to the highest SAR tested for the modified device under similar test configurations. The original and new test results may not be comparable if new device use configurations and exposure conditions are introduced, when unclear, a KDB inquiry is recommended.

2) For each frequency band, if the highest measured SAR of the modified device for a certain configuration (i.e., the head or body) is larger than the highest measured SAR for the original device under similar test configurations, then a Class II permissive change is required and SAR shall be addressed for the applicable operating configurations in each frequency band.

3) Changes in antenna, and/or key radiating or metallic structures for portable devices require SAR evaluation to determine if a Class I or Class II permissive change is required.

   a) SAR is primarily dependent on the near fields and RF current distributions on a device; therefore, minor and simple metallic changes can cause relatively large changes in SAR.

   b) Antenna gain is normally considered a far field parameter (e.g., §§ 15.31(f) and 2.1053(a), 2.1 of OET Bulletin 65); however, SAR is primarily dependent on the near field exposure conditions. SAR compliance should be considered separately from the § 15.204 antenna gain provisions.

   c) When adding an equivalent antenna for a Part 15 device, i.e., identical antenna type with the same or lower gain, with no other change to the transmitter and host device configurations, and the highest SAR measured for that antenna type in previous certification(s) is less than 0.8 W/kg, SAR evaluation is not required to add an equivalent antenna. Otherwise, SAR should be evaluated for the additional equivalent antenna(s) according to the procedures required for the transmitter, antenna and host device configurations.

C. Permissive change applications that include a change in exposure limits (from SAR to MPE limits or *vice versa*), or in device use configurations, must conform to the following guidelines:

1) Class II permissive change applications may not be used to resolve unaddressed or misrepresented exposure issues for device configurations in the original authorization. For example, original cell phone handset applications usually include SAR compliance information. A permissive change may not be used to amend an application if SAR was inappropriately not included, or if the device was represented as being for only mobile, not portable use.

2) Examples of allowed permissive changes for devices having mobile and portable use configurations (different exposure limits, i.e., MPE and SAR) include:

   a) Requesting authorization to add a mobile passive vehicle mount antenna to a portable held-to-head, body-worn and hand-held device (Equipment Classes TNE, PCE, PCT, TNT). The following application requirements apply:

i) Include a new grant line entry and radiated power, if applicable.

ii) Include an MPE evaluation, if applicable.

iii) Provide specific and separate grant remarks for mobile and portable usage conditions.

b) Requesting authorization to add specific hosts or antennas for devices approved as modules to include appropriate SAR evaluations. See KDB Publication 996369 for transmitter modules and the KDB Publications for RF exposure procedures (KDB Publication 447498 and references therein).

VII. MISCELLANEOUS CHANGES

A. A change to an unlicensed transmitter from non-modular to modular (single or limited single) or the reverse, is permissible if the changes meet all the requirements for a permissive change (§ 2.1043), for a modular transmitter (§ 15.212) and all other applicable rules. (See KDB Publication 996369 for additional guidance).

B. A change to an unlicensed transmitter from single (non-limited) module to a limited single-module or change from limited single-module to single module is permissible if the changes meet all the requirements for a permissive change (§ 2.1043), for a modular transmitter (§ 15.212) and all other applicable rules. (See KDB Publication 996369 for additional guidance).

C. Changes to licensed device are permitted under the conditions similar to VII) A) and VII) B) above, if the devices use general engineering practices and guidelines similar to those for unlicensed transmitters to demonstrate compliance.

D. A change for a licensed or unlicensed transmitter from non-modular to split modular (split or limited-split) or the reverse, or modular (single or limited) to split modular (split or limited-split) or the reverse, requires a new grant of certification (FCC ID).

E. A change from software defined radio (SDR) to a non-SDR or vice versa requires a new grant of certification (FCC ID).

F. Disabling modulation or frequency band of operation (e.g., removing GSM) – If a device has components on it that are disabled by software or keyboard function, the change to the device may be approved under the same FCC ID as the original. However, if the modulation function of a device is disabled by having the parts removed, approval under a new grant of certification (FCC ID) is required. (See V) D) above).

G. Change in FCC ID filings (§ 2.933) in conjunction with a permissive change filing (§ 2.1043): Where both a permissive change and a change in FCC ID are required by the grantee, the § 2.933 change in FCC ID application (or applications in the case of composite Equipment Class FCC IDs) must be processed first, followed by the § 2.1043 permissive change filing(s). Note that a filing for change in FCC ID requires that the applicant has written permission from the original grantee to file the application.

H. Change in FCC ID filings and permissive changes for U-NII devices subject to DFS and radar detection requirements:

1) Permissive changes are subject to the updates and requirements in KDB Publication 443999. The filing must include the appropriate user's manual and attestations.

2) Change in FCC ID filings are subject to the following requirements:

a) Letter exhibit(s) and photo as specified in § 2.933 including the authorization letter from the original grantee.

b) An attestation statement from the applicant stating that as the grantee they are responsible for changes to the device and will not alter or offer any capabilities that will modify DFS settings.

c) A complete User's Manual from the new grantee that meets all the requirements of KDB Publication 443999.

d) A letter exhibit showing how the device meets the requirements of KDB Publications 443999 and 594280.

I. Permissive change information for U-NII devices under the new U-NII rules effective June 2, 2014 in Report and Order ET Docket 13-49 can be found in KDB Publication 926956.

J. For a change in FCC ID filing for SDR devices, the new grantee must also have a signed attestation from the original grantee addressing how they will share, manage and/or control the radio software. The attestation needs to re-address the software defined radio security description guide in KDB Publication 442812 considering the new grantee. For example, the original security description may prohibit third party radio software control but may now allow limited control with the new grantee.

VIII. RELATED KDB PUBLICATIONS

- KDB Publication 178919 D02, Permissive change frequently-asked questions
- KDB Publication 285076, Equipment Authorization Guidance for Hearing Aid Compatibility
- KDB Publication 388624, Pre-Approval Guidance
- KDB Publication 442812, SDR Apps (Application) Guide
- KDB Publication 443999, U-NII devices subject to DFS and Radar Detection Requirements
- KDB Publication 447498, for evaluation of SAR for portable and mobile configuration
- KDB Publication 594280, Software Configuration control
- KDB Publication 616217, to determine SAR and simultaneous transmission test requirements for laptop and netbook configurations to minimize subsequent evaluations for use in other hosts
- KDB Publication 784748, Labelling requirements
- KDB Publication 926956, U-NII Transition Plan
- KDB Publication 996369, Transmitter Modular Equipment Authorization Guide

Change Notice

06/08/2011: D01 Permissive Change Policy v05 has been changed to 178919 D01 Permissive Change Policy v05r01.

- Item 4 – Software changes: changes are incorporated by software, the technical description must clearly explain what controls are implemented to prevent third parties or unauthorized parties from making modifications to the transmitter to enable operation outside the conditions of grant of authorization" has been added

01/05/2012: D01 Permissive Change Policy v05r01 has been changed to 178919 D01 Permissive Change Policy v05r02.

- The title for Item: 3) Printed Circuit Board (PCB) or hardware changes: was corrected for a typo from i) to 3). No other changes have been made.

10/24/2012: D01 Permissive Change Policy v05r02 has been changed to 178919 D01 Permissive Change Policy v05r03 to allow TCBs to approve third party software upgrades as PBA. Permissive changes and RF exposure considerations has been changed to reference the published RF exposure KDB procedures.

05/16/2014: D01 Permissive Change Policy v05r03 has been changed to 178919 D01 Permissive Change Policy v05v4 to allow address changes to U-NII devices as a result of the rules adopted under ET Docket 13-49.

10/16/2015: D01 Permissive Change Policy v05r04 has been replaced by 178919 D01 Permissive Change Policy v06. Updated as a result of the rules adopted under FCC 14-208. Consolidated permissive changes involving transmitter amplifiers. Footnote added at minor circuitry changes subclause. Numbering and format updated consistent with other recent KDB publications. Selected emission, power, and equipment class provisions updated in the Software Changes clause, along with cross-reference to wireless microphones new rules. Corrected units for power density in part 15 antennas clause. Add citation to KDB Publication 178919 D02.