

Dward ATCB

From: Rick McMurray [rmcmurray@rheintech.com]
Sent: 09/12/2006 3:45 PM
To: Dennis Ward; Kathy Grzovic
Cc: Desmond Fraser; Dan Baltzell; Dan Biggs; Shelley Grandy
Subject: FW: Response to Inquiry to FCC (Tracking Number 361543)

From: Generic Office of Engineering Technology [mailto:oetech@fccsun27w.fcc.gov]
Sent: Tuesday, September 12, 2006 5:18 PM
To: Popowitch, Daryl
Subject: Response to Inquiry to FCC (Tracking Number 361543)

Inquiry:

I can not find anything in the KDB about this question. In a scenario of a new original Grant for a mobile radio in the LMR UHF band, a rated power of 100 W is desired to appear on the Grant. We have set the conducted power before shipping to the lab for certification testing where they have measured anywhere from 102 to 104 watts across the UHF band. What is the allowed tolerance between actual conducted power measured and the rated wanted? In this case can the Grant show 100 W? Is it necessary to go back to the lab with a unit reduced by a couple of watts to be able to list 100 W? How close to 100 W is close enough to have it listed as 100W? We are able to change the conducted power out in 1 W increments only. For a portable it would be even worse. There could potentially be M/A-COM instruments, the test lab instruments, and a SAR test house instruments. I believe Rich Fabina told me one time that 5% was acceptable - plus minus 5%. I am not getting any help from American TCB on this, only that I need to go back to the lab and get closer ... but by how much (?), if I want 100W. Thank you for your help. Regards, Daryl Popowitch M/A-COM, Inc.

Response:

90.205(r) allows grant output power to exceed the manufacturer's rated nominal power by up to 20 percent. For the case at hand, grant ouput power can be listed as 100 W.

Other general guidance about grant power listing includes:

Related to 90.205(r), all part-90 filings should have:

- a) EMC / test report, user manual, op. desc. exhibits and Form731 power at P_nominal
- b) RF exposure evaluation, if applicable, at P_nominal+20%, unless filing documents that device will not give 120%

FCC/TCBC info-meeting notes Oct05 Dayhoff
(<http://www.fcc.gov/oet/ea/presentations/Welcome.html>)

- 2.1046 - RF Power Output
- - Power listed on grant is based on measurement data and supplied in the report.
- - Manufacturers ratings should agree with listed power.
- - The FCC has no official tolerance for power output listing for Equipment Authorization.
- - Some Radio Service Rules have station license tolerances and Part 2.931 allows for "production tolerances"

- - - In many cases RF exposure evaluation output power used and test results determine the maximum power that can be listed on the grant.
- - - Production tolerance is never defined by rules.

Certification Output Power Listing

OET/Lab/EAB 7/14/06

The output power listed on the grant must be in watts, and is considered to be the power rating of the device. An output power listing is required (when applicable) for each emission designator, each frequency band, and additional configurations (e.g., vehicle-mount passive antenna kits for Part 22 and Part 24 devices).

1. Output power is listed in the same units/quantity as the applicable limit (e.g., EIRP for Part 24 mobile / portable station).
 - a. For Part 15 devices, list only conducted output power when applicable (i.e., 15.247, 15.407).
 - b. For licensed devices subject to a field strength limit for the fundamental signal, indicate conducted output power if EIRP or ERP is not specified. The field strength measurement must still be compared to the field strength limit. One such example is for WMTS, 95.1115(a) where a field strength limit is specified.
2. Conducted output power can be listed for devices where measurements can be made at the antenna connector, and subject to the conditions below. The conducted output power listed must be the same type (i.e., peak, average) as defined by the applicable rule part. Indicate "Power listed is conducted" on the grant.
 - a. Allowed for devices authorized without specific antenna(s), e.g., 24E base-station tower-mounted antennas. Also allowed for licensed service module and module-like devices without specified antennas used in mobile and fixed RF exposure conditions.
 - b. Allowed for module-like devices authorized with specific antennas (i.e., built-in antenna) subject to radiated power limits (e.g., 24E integral-antenna PCMCIA). List conducted power on line-item and radiated power in grant note.
 - c. Not allowed for final products authorized with specific antennas, e.g., 22H, 24E handsets and laptops.

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