

Starkey position statement on Part 15.247 and experimental license application
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Starkey Labs Inc. an industry leader in the design and manufacturing of hearing assistance devices and the largest manufacturer of hearing aids in the United States of America requests the following consideration.

Starkey labs would like to conduct an experiment over the next 24 months to determine the feasibility of operating a wireless communication interface between a transmitter consisting of a digitally modulated stream of audio and telemetry information from a portable communications device to a radio embedded in a hearing aid. Starkey would like to use 15.247 as modified by the following.

15.247(a)(2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least **100** kHz.

Which modifies the current provision which states:

15.247(a)(2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least **500** kHz.

Starkey labs and other companies involved in the manufacture and development of hearing assistance devices request to use the ISM band centered from 902 to 928 MHz for digitally modulated signals with a power spectral density equivalent to 8 dBm/3Khz as per section (e) of Part 15.247 with the caveat that the overall spectral mask may be less than the 500 KHz for 6 dB BW as specified in section (a)(2) of Part 15.247. Starkey asks for a temporary waiver, for hearing aids, of the present rule as it exists pending a rule making proceeding on the subject of allowing wireless services to operate with a power spectral density pursuant to FCC part 15.247(e) which states: For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmission.

This changes the 500 KHz requirement of 15.247(a)(2) to 100 KHz without changing the power spectral density requirement. Which is in keeping with the spirit of 15.247(e), that requires a maximum power spectral density of 8 dBm/3KHz.

On December 3, 2007, Starkey employees Ken Meyer, Jeff Solum accompanied by counsel, Gloria Tristani, met with the following personal from the FCC's Office of Engineering and Technology:

1. Julius Knapp, OET Chief
2. Bruce Romano, Associate Chief (Legal)
3. Geraldine Matise, Division Chief, Policy Rules Division
4. Mark Settle, Deputy Chief, Policy and Rules Division
5. Karen Ansari, Technical Rules Branch Chief,
6. Patrick Forster
7. Rashmi Doshi, Chief, Laboratory Division (via teleconference)
8. Jim Szelica, Laboratory Division (via teleconference)

The subject of the meeting was to discuss a potential waiver and subsequent rule change to part 15.247 as stated above.

It was suggested by the FCC officials at the meeting that Starkey apply for an experimental license prior to seeking a waiver. This was to allow Starkey to begin to field test the potential benefits of such a change.

Public interest:

This experiment is in the public's best interest since Starkey Laboratories Inc. is proposing to maintain the same power spectral density as that of wideband digitally modulated systems presently limited to a minimum of 500 KHz (6dB Bandwidth) within a narrower bandwidth. This will limit the overall RF power for narrow band digitally modulated signals by containing the spectrum to a narrower band. This will reduce the RF interference produced by devices requiring a lower bandwidth for digitally modulated signals than 500 KHz as stated in the present rule 15.247(a)(2).

Background:

Starkey Labs is interested in facilitating wireless configuration, hearing enhancement, and assisted listening for the hearing impaired. To accomplish this, Starkey Labs Inc. of Eden Prairie, MN has made a significant investment in ultra-low power communication devices in the 902 to 928 MHz ISM band. These ultra-low power RF communication devices will use a minimum amount of power and bandwidth to accomplish the communications necessary for maintaining a high quality of life for the hearing impaired. Starkey is interested in experimenting with lowering the minimum bandwidth limits from 500 KHz in section (a)(2) of part 15.247 to any bandwidth greater than 100 KHz while maintaining the power spectral density as specified in part 15.247(e) of 8 dBm/3 KHz.

The experiment will involve sending digital audio using F2D modulation in the form of MSK type modulation to a hearing instrument located 30 meters from a portable transmitting device. The test will allow Starkey to experiment with using a power level that is closer to +20 dBm and see how it works with various interference types. Starkey

is planning on using adaptive frequency management through intelligent frequency selection to work in conjunction with various types of interference in the 902 to 928 MHz ISM band. It is hoped that this experiment will prove that 30 meter range is achievable in the face of normal interference in this band by increasing the output power from -15. dBm as required by 15.249 to an output power approaching +20 dBm using a modified 15.247 to allow 8 dBm/3 KHz. If the test proves successful, Starkey intends to seek a waiver for the hearing impaired to operate using this power spectral density in a 200 – 250 KHz BW.

Jeff Solum
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Starkey Labs Inc.
12/13/2007