To: Dennis Ward, American TCB
From: Joseph Desjardins, DTC Communications, Inc.

Date: 11/20/02

Dennis,

The following message and list of questions was received from Martin Perrine at the FCC, via e-mail and forwarded to DTC Communications Inc. by Dennis Ward at American TCB. This response contains those questions as well as responses from DTC.

In regards to your recent TCB grant referenced above we kindly request that you provide the following additional information.

EMC

1. **Additional information regarding the necessary BW calculation. M stated is 4.25 MHZ however, the operational description mention subcarriers at 7.5 MHZ.**

DTC response>>

Necessary bandwidth was calculated according to Title 47 CFR paragraph 2.202(g). The formula Bn = 2M+2DK was used where:

Bn = Necessary Bandwidth
D = Peak frequency deviation
M = Maximum modulating frequency
K = 1

When using the formula Bn = 2M + 2D, the values of M and D used must correspond (i.e. the value used for D must be that deviation achieved by the modulating signal M). In this application, there are two possible values for M and D.

Case 1: Assume the subcarrier signal defines the necessary bandwidth:

By design, the highest modulation index generated by the subcarrier signal is 0.0063. A modulation index of 0.0063 corresponds to a maximum deviation of the main carrier of 48 kHz (assuming the max subcarrier frequency of 7.5 MHz).

M = 7.5 MHz (highest subcarrier frequency)
D = 48 kHz (Peak frequency deviation caused by the subcarrier signal)

Bn = 2M + 2D
Bn = 15.1 MHz

Case 2: Assume the video signal defines the necessary bandwidth:

M = 4.25 MHz (highest video frequency)
D = 4.0 MHz (Peak frequency deviation caused by the video signal)

Bn = 2M + 2D
Bn = 16.5 MHz

Case 2 results in the greater required bandwidth therefore this is designated as the Necessary Bandwidth.

2. **Justification of the emission mask chosen for compliance. Mask C seems to be appropriate for this device.**

DTC response >>

Emission Mask C is obviously intended for narrow-band communication devices. Mask C requires the emissions to start rolling off at a frequency 5 kHz removed from the center of the authorized band and to be attenuated by 25 dB at a frequency 10 kHz removed from the center of the authorized band. This can only be appropriate for devices utilizing narrow-band FM modulation.

Mask B most closely represents the device for which approval is being sought. Though the main modulation port on the transmitter in question is not equipped with an audio low pass filter (due to the fact that signals up to 4.25 MHz are used for modulation), the input signal is inherently low pass filtered by virtue of the fact that the NTSC video signal is band limited to 4.25 MHz. In addition, Mask B uses relative frequency references to define the amplitude attenuation points, which makes it suitable for use with signals of any bandwidth.

SAR

1. **Updated exhibits. Per 27 September letter to ATCB question 5, this device is not meant to be marketed to the general population. There are references to GP use in the user manual, RF exposure exhibit, and possible other locations. All should be removed.**

DTC response >>

See updated user manual.

2. **New MPE estimates and associated exhibits/information. MPE estimates using far field equation appear to be used within the near field and transition region. Please use appropriate near field/transition region estimations. Also, for mobile use distances under 20 cm are not appropriate.**

DTC response >>

See updated RF Exposure statement.

3. **Justification for system validation. Probe conversion factor on the plot does not agree with the probe certification.**

DTC response >>

See response from Celltech Laboratories

4. **Additional body-worn antenna photographs. Please show the "usage information" on the antenna mentioned in appendix A which instructs the user how to use the antenna.**

DTC response >>

See added photograph.

5. **Please provide additional RF safety information for how the user can control their exposure. For example, the user might be advised to wear thicker garments under the vest to increase spacing to the antennas. Additionally, it seems inevitable that a user would use the device close to the body with an antenna such as the "rubber duck" antenna. Clearer instructions should be given to prevent such operation. Alternatively, SAR data using such an antenna should be provided.**

DTC response >>

See updated user manual.

6. **Discussion how use of the D cell battery pack will be prevented for body-worn use. Please provide appropriate user instructions.**

DTC response >>

See updated user manual.

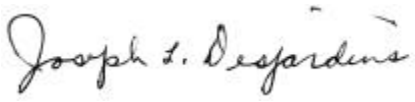
7. **Updated power in form 731. Power should be no greater than that tested for SAR.**

DTC response >>

For the purpose of these tests, the RF output power of the unit was set as close as possible to the maximum level allowed in the tune up procedure, within the measurement capability of the available equipment. At the time of SAR testing, the testing laboratory measured the maximum RF output power at +24.6 dBm. The variation between these values is within measurement error of available equipment.

If it is assumed that the RF power measurement made by the SAR testing laboratory is accurate and is in fact 0.4 dB below the maximum allowable power stated in the tune up procedure (+25.0 dBm), then the SAR level at the maximum allowable power would be 0.4 dB higher than was actually measured at the time of testing. If the RF power were increased by 0.4 dB, then, by linear extrapolation from the measured data, the resulting level would increase to 2.96 W/kg., still well below the limits for Occupational/Controlled Exposure of 8 W/kg.

Regards,



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