

**MOTOROLA**

Date: June 15, 1999.

Mr. George Tannahill
Federal Communications Commission Laboratory
Authorization & Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

Dear Mr. Tannahill:

Motorola Inc., 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322, is sending the following information in response to your email correspondence of June 14, 1999 for Certification application with FCC ID: AZ489FT5792 (Confirmation Number: EA93655 and Correspondence Reference Number 8221):

1. Carson's rule is applicable for and has been used for single channel analog FM transmitters, emission type F3E. It is not applicable for the subject transceiver which simultaneously provides emission on 4 channels which are symmetrically spaced at 4.5 kHz intervals about the assigned frequency. Each of these sub-channels is digitally modulated at a rate of 4 kilosymbols per second using a variation of quadrature AM or quadrature PSK, as described in Exhibit 4.2. When combined the four sub-carriers transmit a total of 16 kilosymbols per second which can convey from 32 to 96 kilobits per second. As an example of attempting to apply Carson's rule, using Quad-16 QAM with $M = 4 \times 4 \text{ kHz} = 16 \text{ kHz}$ and $D=0 \text{ kHz}$ leads to a value of 32 kHz. This is significantly in excess of the emission bandwidth due to modulation evident in Exhibit Figure 6-1.

Further, 47 CFR 2.202(a) also recognizes that the 0.5% of the energy lying outside the occupied bandwidth (defined as that band containing 99% of the emission power) leads to practical difficulties in the definition of occupied and necessary bandwidth for multi-channel frequency multiplexed transmitters such as the subject transceiver, and allows for use of a different percentage such as that described in our reply dated 11 June, 1999. The 99% bandwidth measured at 17.4 kHz excludes significant sideband energy on the outer edges of the outer sub-channels, as explained in the letter dated 11 June 1999, so we have elected to base our emission designator choice on the standard channel bandwidth of 20 kHz specified in the table of 47 CFR 90.210(b)(5) for the frequency range 806-824 MHz. It is sufficient to contain the sidebands needed for the outer channels, and has been found acceptable for use with several previously accepted devices such as FCC ID: AZ489FT5783, FCC ID: AZ489FT5791, et. al.

2. The subject transceiver functions no differently in the extended frequency range 821-825 MHz than it does in the frequency range 806-821 MHz. Performance data in the extended range has been supplied in Exhibit Tables 6-2, 6-4, 6-7 and 6-8 to demonstrate that operation is compliant in the extended band as well. What is desired and we feel is justified is a grant for the band 806-821 MHz band, with a note in the Grant like that in the FCC letter cited to state in effect "The stated equipment conforms to emission masks G and EA

for the band 806-825 MHz, however, the grant specifies the frequency range 806-821 MHz as that is the band in which those masks are applicable."

There is no intent for this equipment to be operated in the US under Rule Part 22.

3. Internal photographs with shields removed are attached.

We trust that the above response meets your requirements. Please contact me at (954) 723-5793 if you require any additional information.

Regards,

Mike Ramnath
FCC Liaison
Email address: emr003@email.mot.com