



Shure Brothers
Incorporated

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RE: FCC ID DD4P7T
Applicant: Shure Brothers Incorporated
Correspondence Reference Number: 5945
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Attention: Frank Coperich

Dear Mr. Coperich,

Attached to our submission are several plots demonstrating the stereo operation of the subject device. One plot without external modulation is provided to show the 19 kHz stereo pilot tone with sidebands. Two additional plots are also provided to demonstrate a "worst case" stereo FM modulation test.

According to Rule Part 2.989, Subpart (e) (5), Occupied Bandwidth Measurements for an FM broadcast transmitter for stereophonic operation, measurements using a 15 kHz modulating tone at 38% modulation for the main channel and the stereophonic subchannel should be provided. For a 75 kHz FM broadcast transmitter, this would result in a deviation of 28.5 kHz.

The design of the Shure P7T Low Power Auxiliary Station transmitter does not allow for direct modulation of the main channel or the stereophonic subchannel. However, by driving either of the audio input channels separately, equal modulation of the main and subchannels is achieved. In this case, we have provided two plots, one with the left channel driven, and one with the right channel driven, using a 15 kHz tone. In each case, the undriven channel was terminated with a resistive load.

The maximum achievable deviation under these conditions was 34.8 kHz total (composite) peak deviation, including the pilot subcarrier. This is due to the operation of the transmitter's internal modulation limiter. For both measurements, the appropriate input channel was driven with a 10 Volt RMS signal, with the transmitter's input gain control set to the maximum position and the rear panel line input pad set to -10 dB (the most sensitive position). The plots for each channel are very similar, as would be expected, since each condition produces the same amount of main and subchannel modulation.

As we discussed previously, this transmitter is intended for "closed circuit" operation in LPAS service, and not for broadcasting to the public. Therefore, the peak deviation capability has been reduced from the standard 75 kHz value that would be used in broadcast service. As the plots demonstrate, the occupied bandwidth of the device remains well within the 200 kHz limit for a LPAS transmitter, even under the severe condition of single channel modulation.

If you have further questions, please do not hesitate to contact us for a prompt response.

Sincerely yours,

Edgar C. Reihl, P.E.
Principal Engineer
Shure Brothers Incorporated