Exhibit 12. **Transmitter Description -----**47 CFR. 2.1033 (c) 4,5,6,7,8

12.1. Transmitter Technical Characteristics

This trunked radio transceiver is of the receive first type, meaning it must first find, acquire and lock onto a control channel from a predefined set of control frequencies assigned to a compatible base station. Transmission is not possible until acquisition and lock has been achieved, then it is limited to transmission of service request bursts on the digitally modulated reverse control channel. Upon recognition of a proper request, the control channel base station transmitter will then assign the transceiver a traffic channel for transmission of digital circuit switched or packet switched data from the set of frequencies for which the trunking system is licensed.

In addition to controlling the assigned frequency to which the transceiver will be slaved, the base station frequency serves as an accurate, stable reference for the transceiver local reference oscillator by virtue of an AFC function inherent in the acquisition and lock process.

The base station allocates the number of 15ms time division multiplex (TDM) time slots in which the transceiver transmits, depending on the user requested transmission mode. The trunking system protocol for data transmission uses a 90ms frame divided into six 15 ms time slots. These slot allocations are summarized in Table 12.1 below.

Transmission Mode	Time Slots Allocated Per Frame	Duty Cycle
1:6 Circuit Switched Data Mode	1	16.67%
1:3 Circuit Switched Data Mode	2	33.33%
Packet Data Mode	up to 81 of 120 slots	up to 67.5%

Table 12.1: Time Slot Allocation Table

RF Power Output

Transmitter output power may be automatically attenuated by up to 24 dB below the maximum transmitter output power setting upon receipt of a command signal from the base station to prevent base station receiver overload. The user has no control over this setting.

The nominal mean average power available at the antenna connector for the various transmission modes and for the minimum and maximum power settings are summarized in the Table 12.2 below:

Transmission Mode	Pulse Average Power at Minimum Power Setting (W)	Pulse Average Power at Maximum Power Setting (W)	Frame Average Power at Minimum Power Setting (W)	Frame Average Power at Maximum Power Setting (W)
1:6 Circuit Switched Data Mode	0.0024	0.69	0.0004	0.1
1:3 Circuit Switched Data Mode	0.0024	0.7	0.0007	0.2
Packet Data Mode	0.0024	0.7	0.0015 (over 20 frames)	0.405 (over 20 frames)

Table 12.2: RF Power Output

iO1000 Occupied Bandwidth Plots

Figure 6-5: Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g),

Maximum Power Setting:

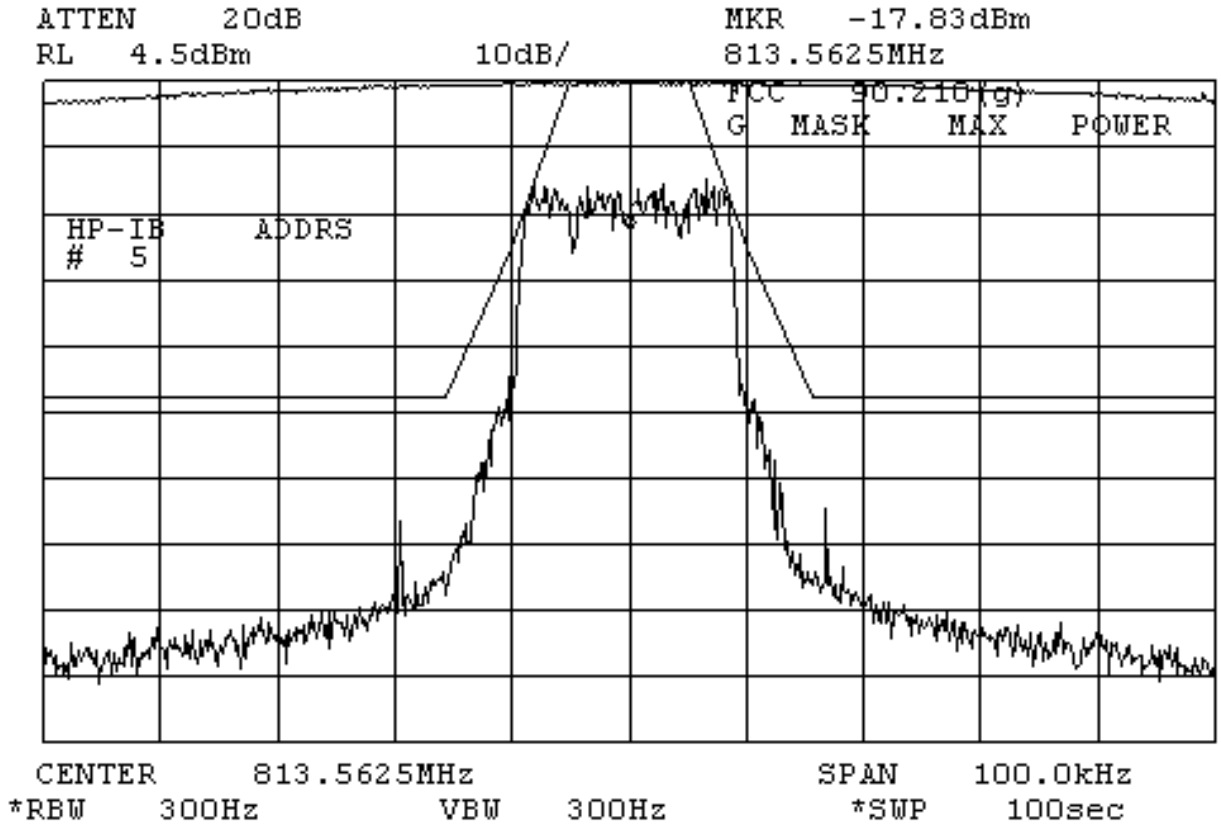

Figure 6-6: Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g),

Minimum Power Setting:

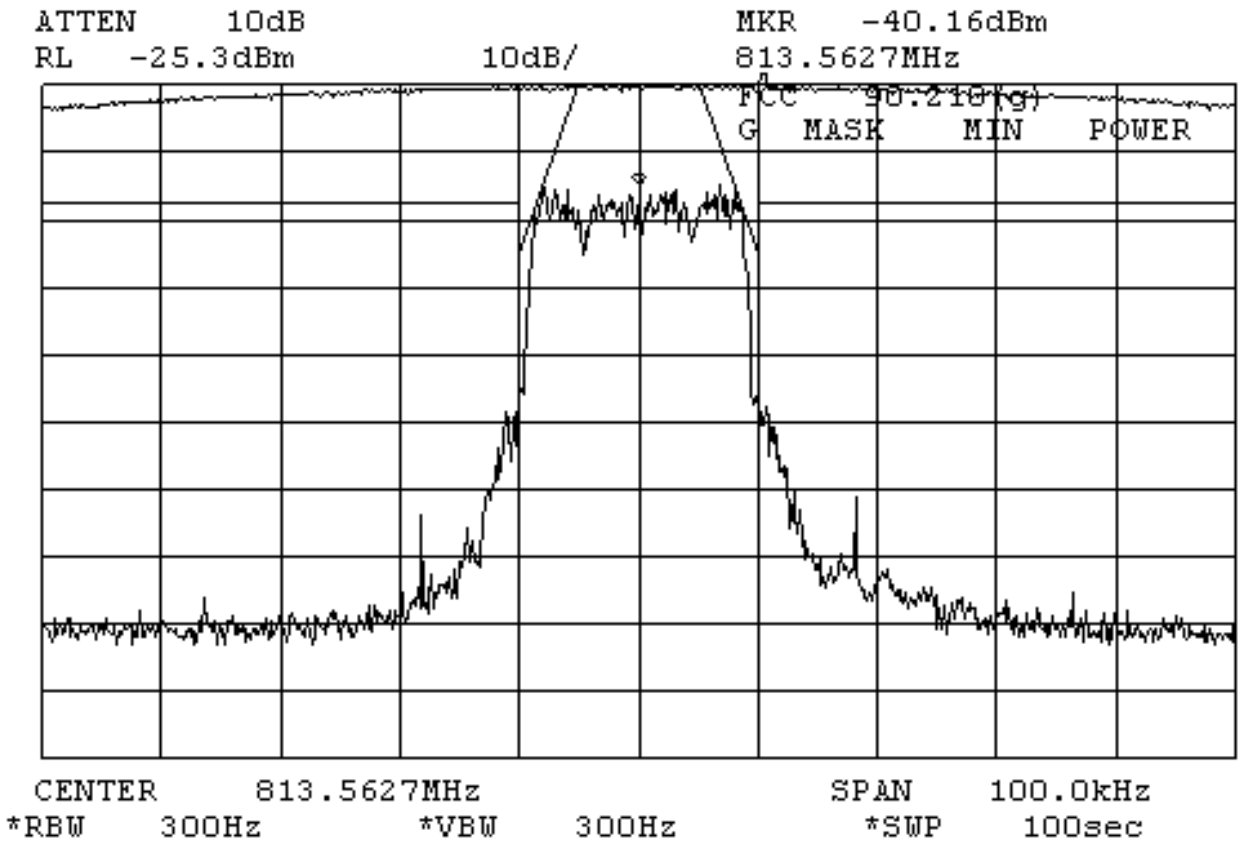

Figure 6-7: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g),

Maximum Power Setting:

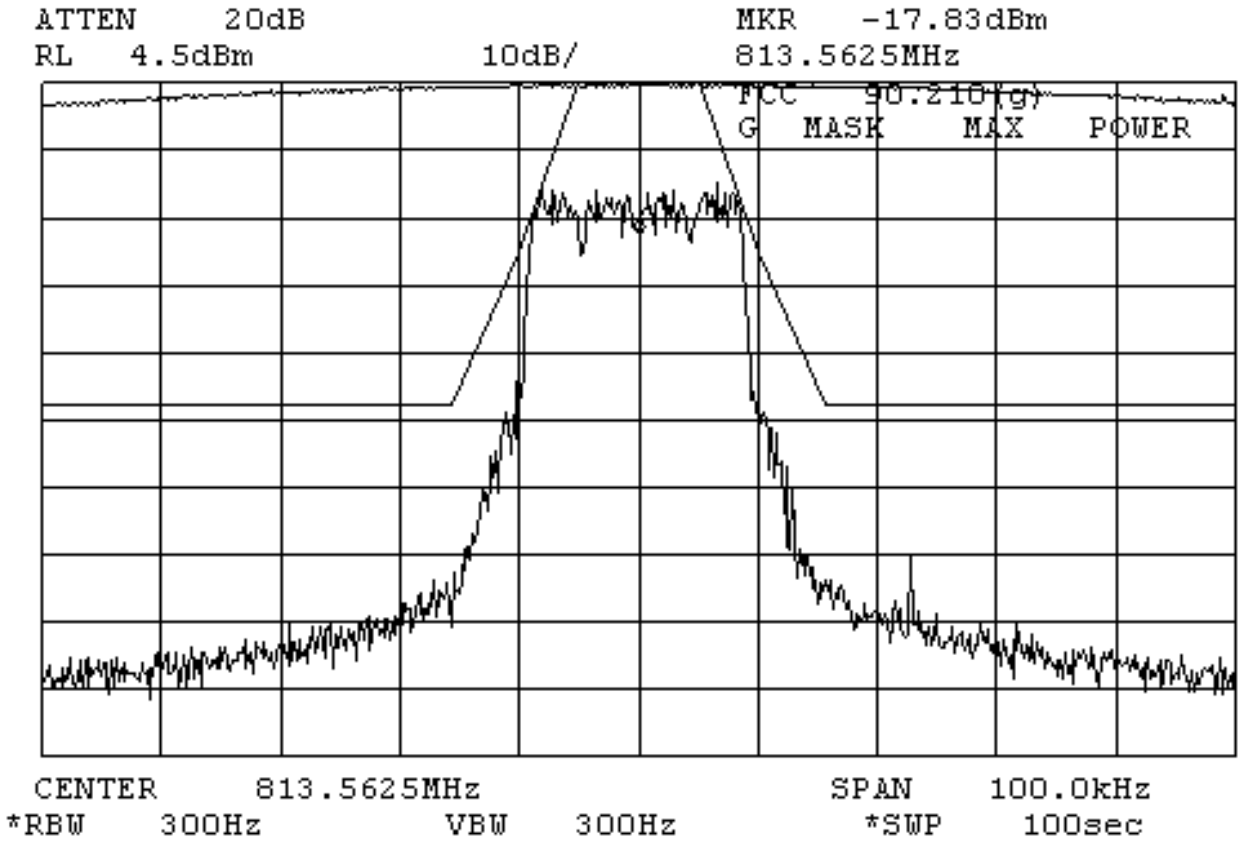

Figure 6-8: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g),

Minimum Power Setting:

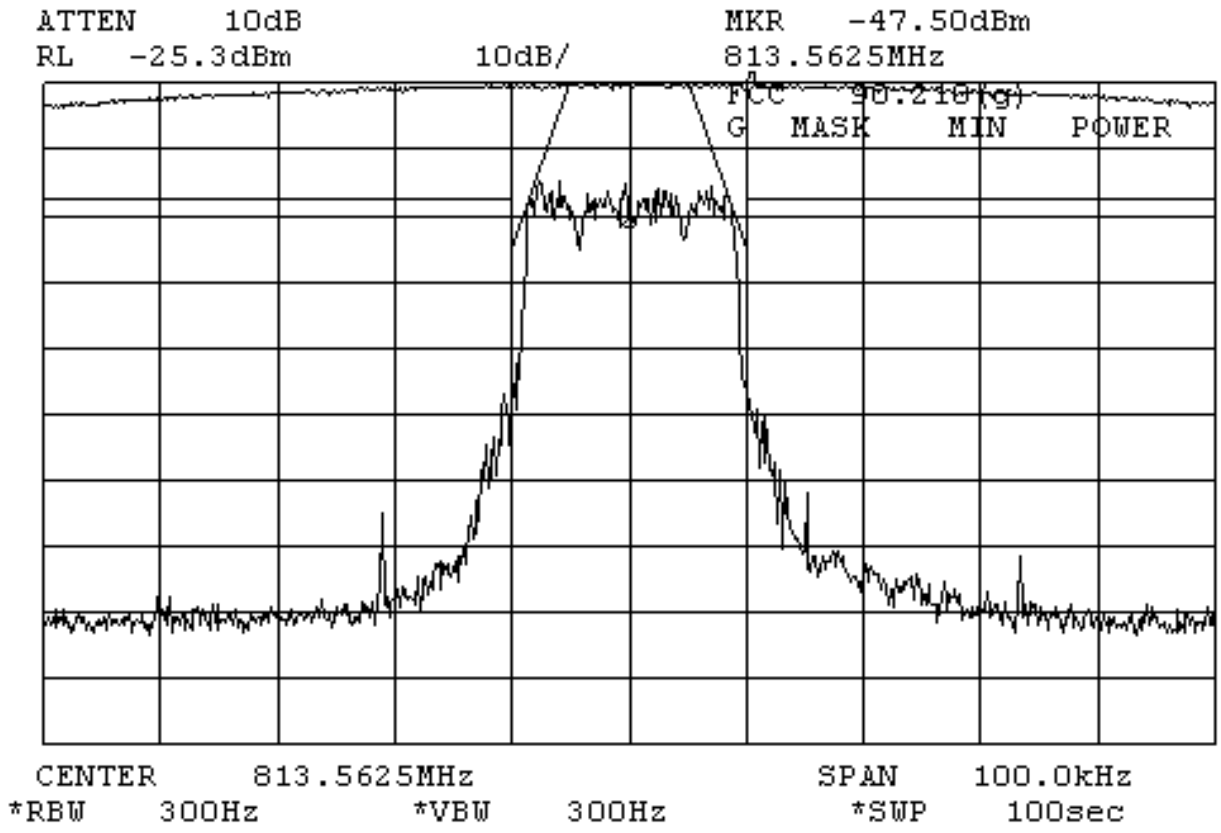

Figure 6-9: Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g),

Maximum Power Setting:

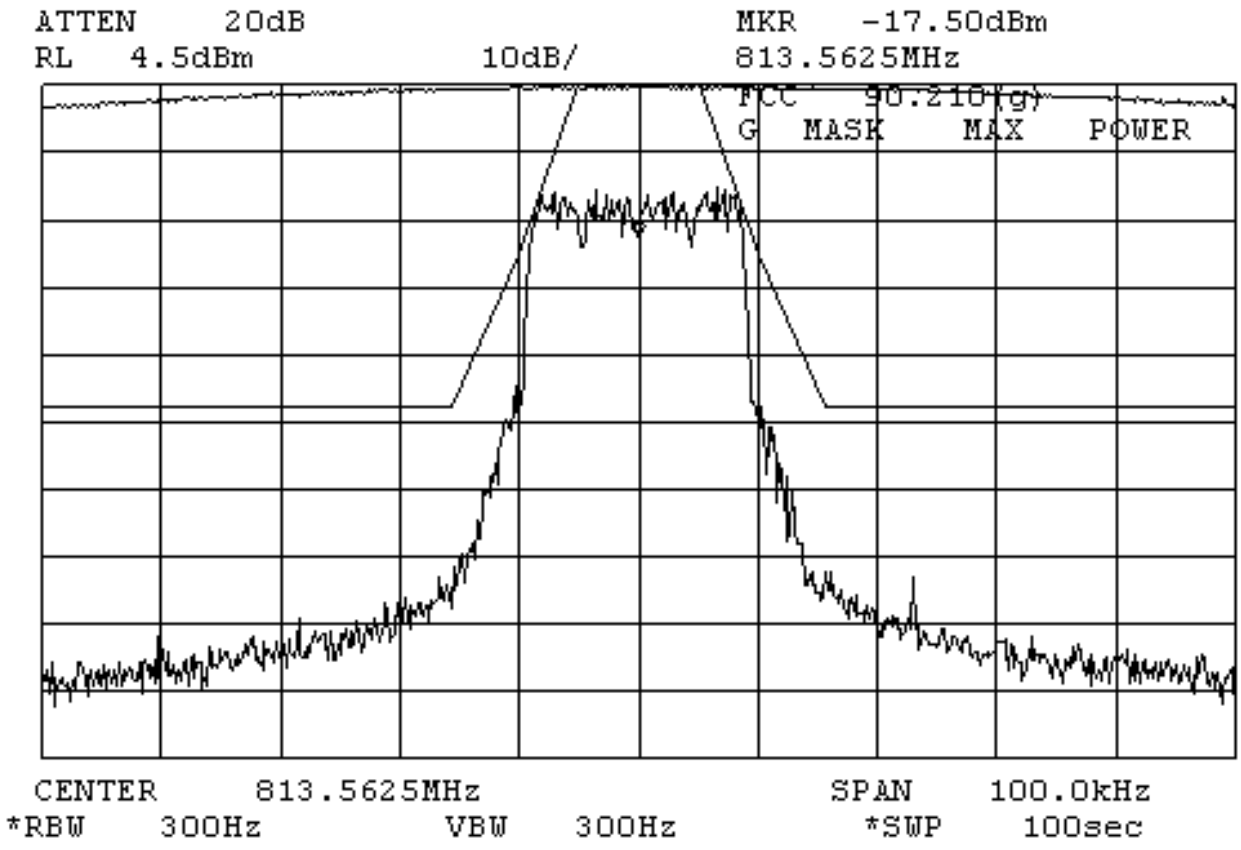

Figure 6-10: Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g),

Minimum Power Setting:

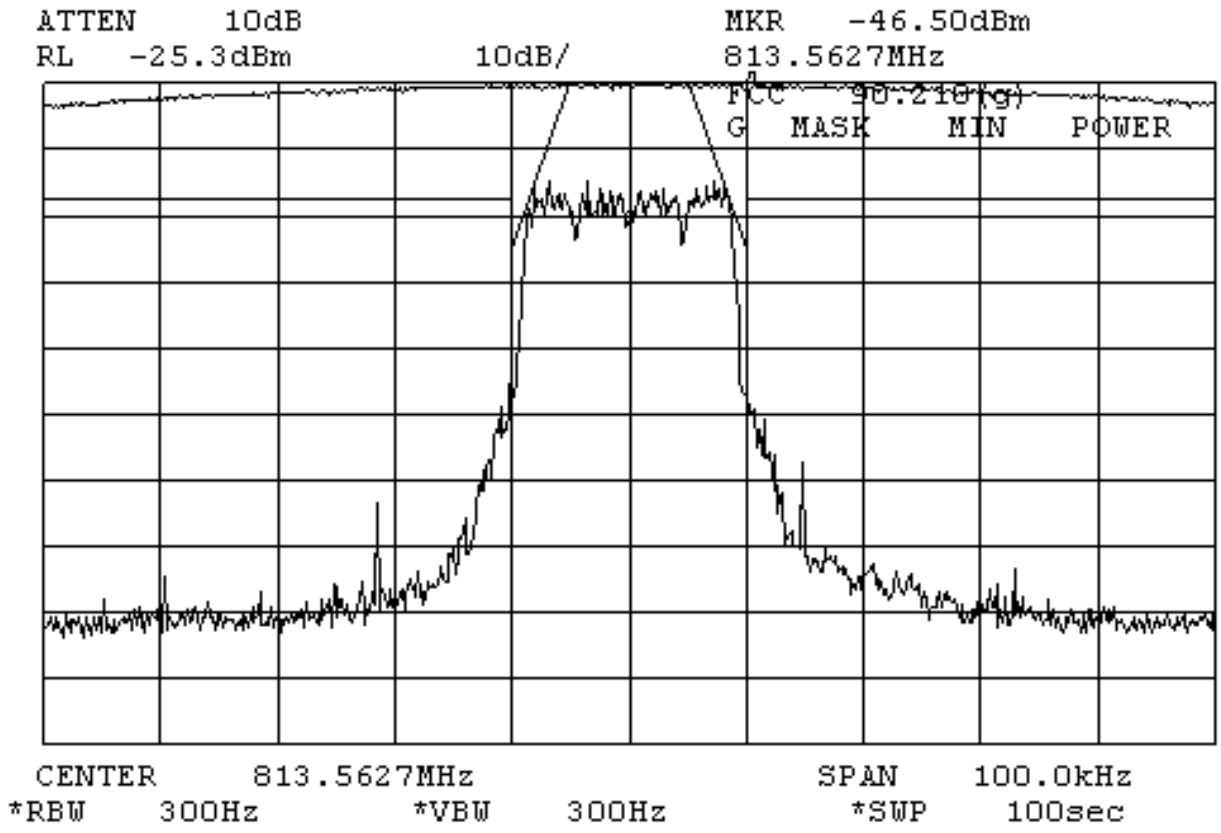

Figure 6-11: Quad-QPSK Modulation performance relative to mask 47 CFR 90.691(a),

Maximum Power Setting:

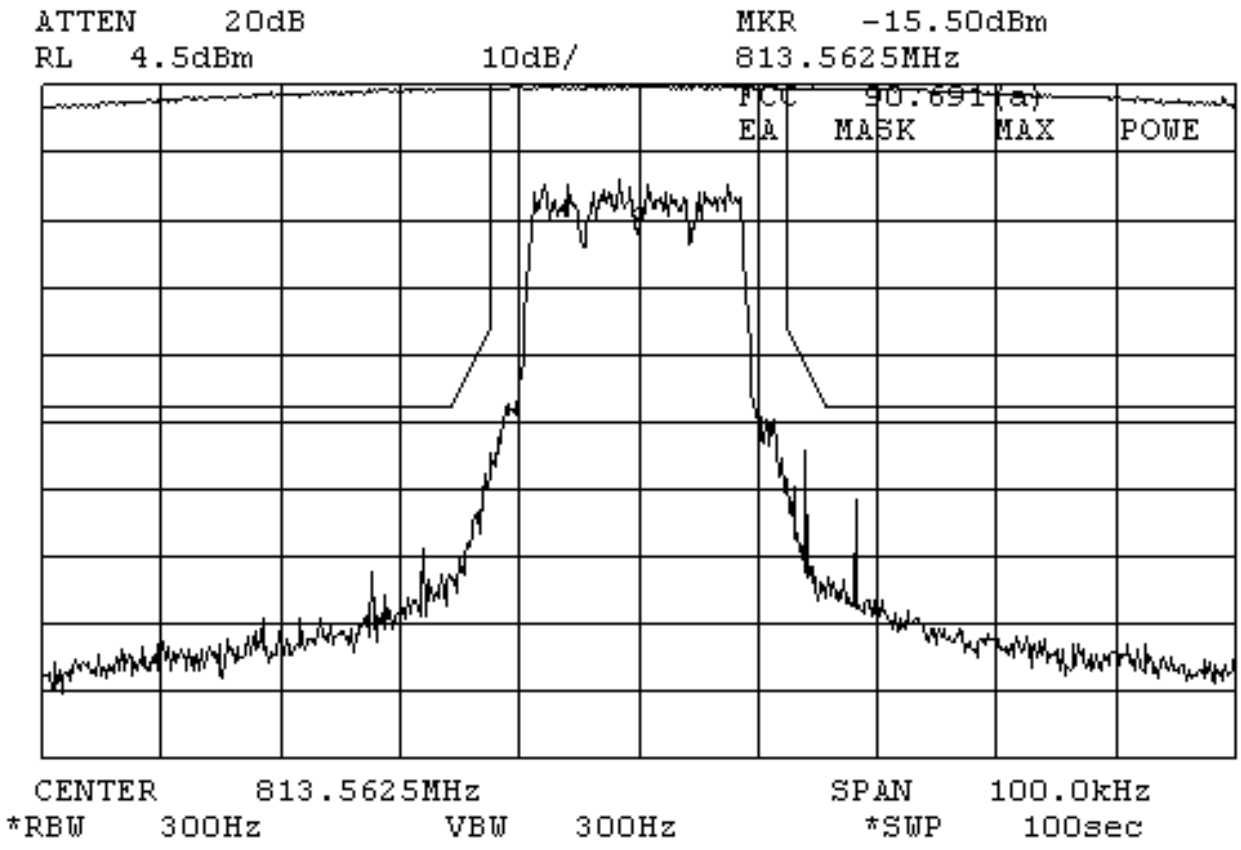

Figure 6-12: Quad-QPSK Modulation performance relative to mask 47 CFR 90.691(a),

Minimum Power Setting:

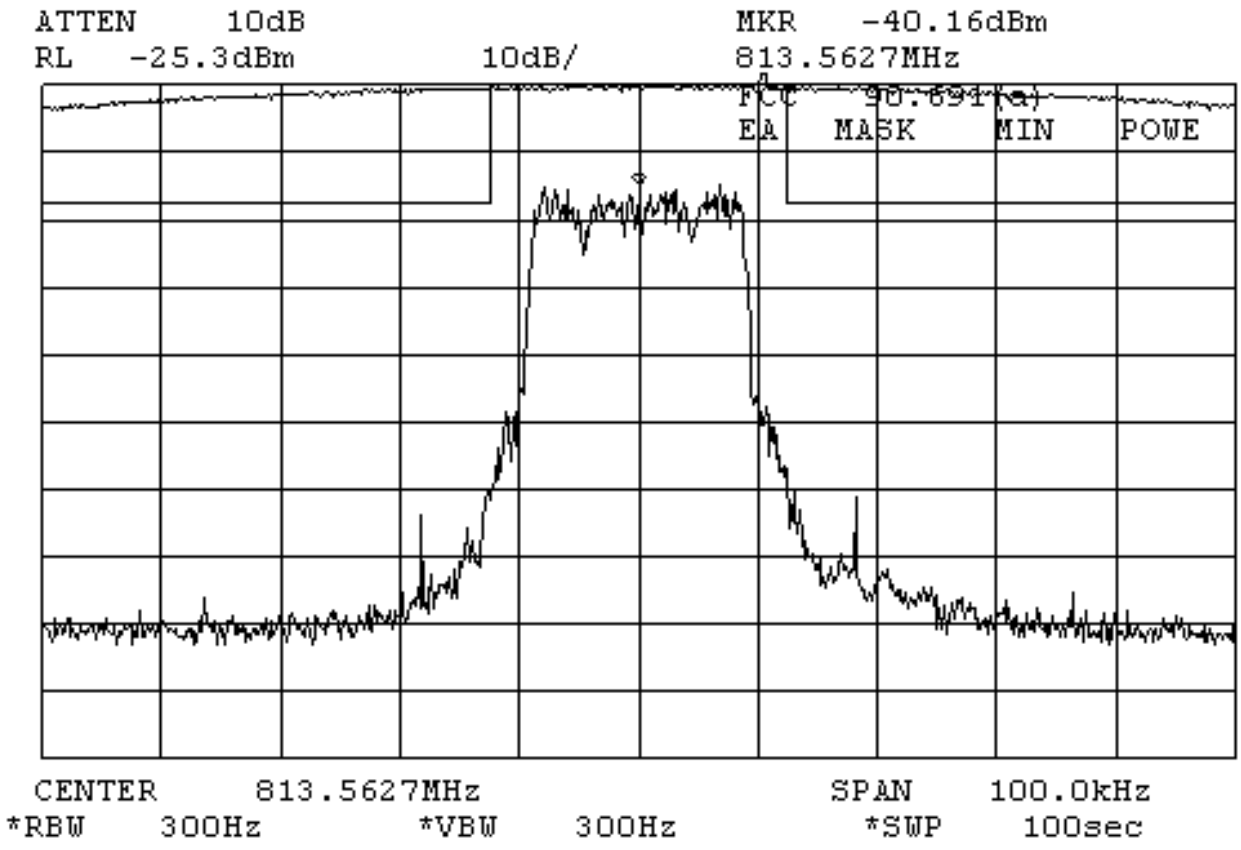

Figure 6-13: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691(a),

Maximum Power Setting:

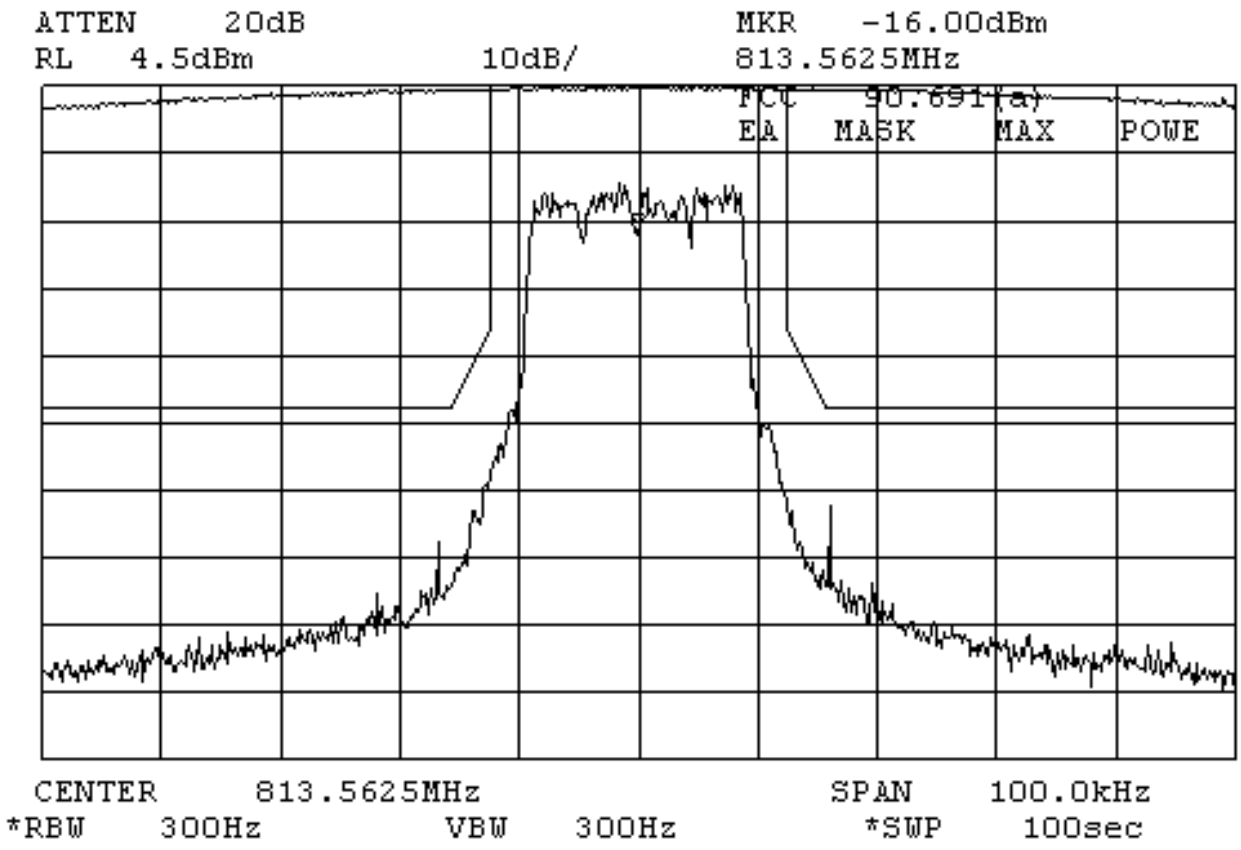

Figure 6-14: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691(a),

Minimum Power Setting:

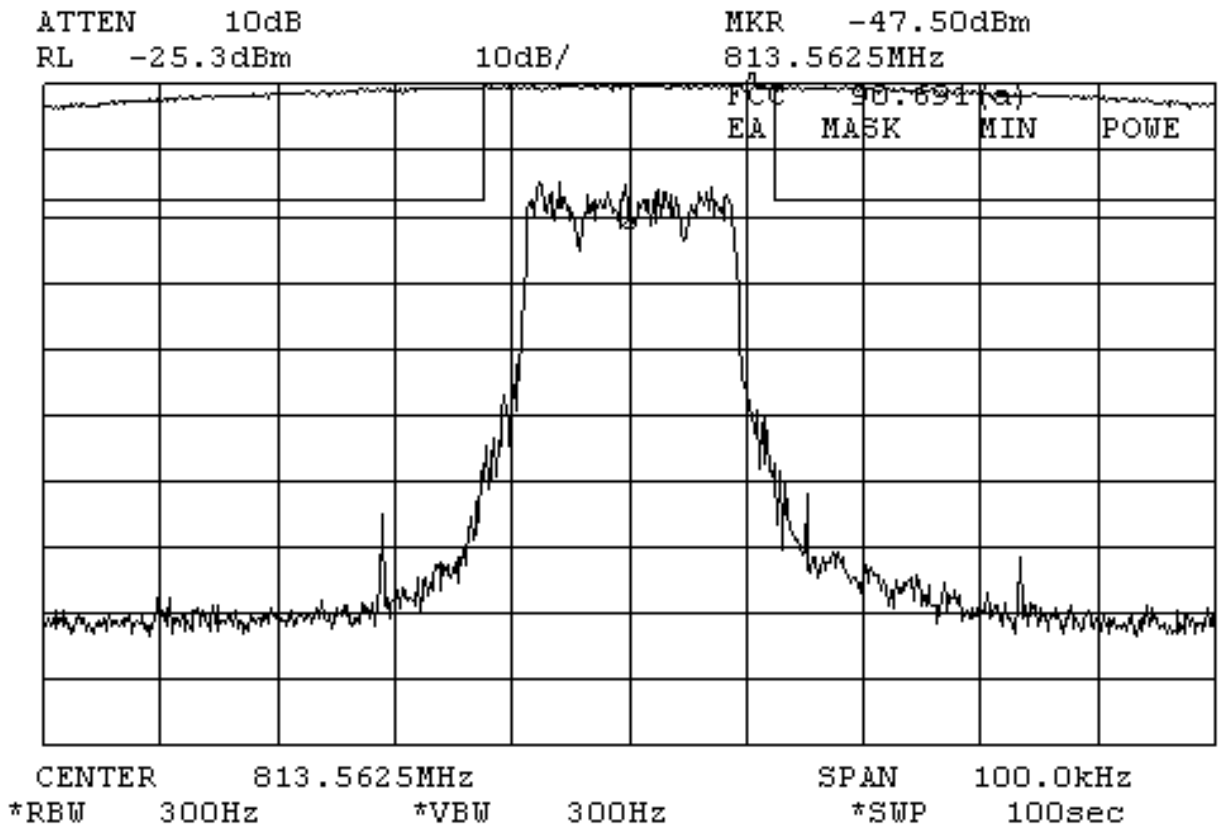

Figure 6-15: Quad-64QAM Modulation performance relative to mask 47 CFR 90.691(a),

Maximum Power Setting:

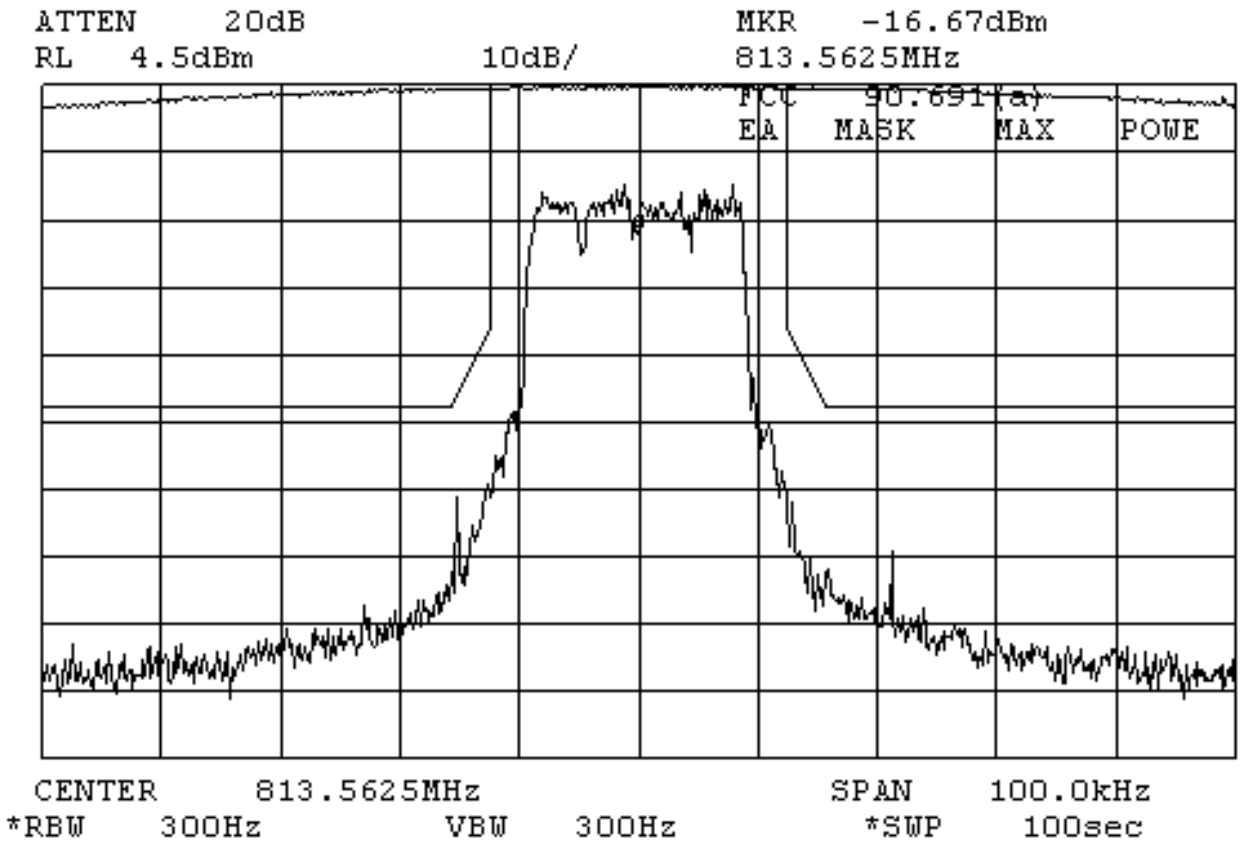

Figure 6-16: Quad-64QAM Modulation performance relative to mask 47 CFR 90.691(a),

Minimum Power Setting: