

Exhibit 6. Measured Data -- Pursuant 47 CFR. 2.1041

6.1 Transmitter Power

The transmitter is a variable power type used in a SMR trunking system. Output power (as defined in 47 CFR 90.7) is dynamically controlled by sensing the quality of the received base station signal, then automatically adjusting an attenuator in approximately 1 dB steps over the range from 0 to 34 dB attenuation.

6.1.1 Maximum Output Power Rating -- Pursuant 47 CFR 2.1033(c)7 and 90.635(d)

Maximum output power rating: 700 milliwatts (28.45 dBm), pulse average power

Note 1: Nominal output power rating: 600 milliwatts (27.78 dBm) (Pulse average power).

Note 2: These ratings are compliant with the FCC maximum of 100 watts (50 dBm) for Mobile stations

Note 3: The term pulse average power is used to specify the power that would be measured during the intervals of recurrent TDM transmission pulses by an average responding RF power meter. Power expressed in this manner is independent of the TDM duty cycle, and facilitates RF system coverage analysis.

6.1.2 Operating output power range -- Pursuant 47 CFR 2.1033(c)6)

Output power will vary over a range from 0.199 to 700 milliwatts (pulse average power).

6.1.3 DC power used by final amplifier device -- Pursuant 47 CFR 2.1033(c)8)

Due to the malfunctions that can occur trying to obtain in the radio the DC characteristics of just the final stage operating, data was obtained and is reported herein for the entire radio.

The DC current and the RF output power was measured with a battery eliminator set to the nominal battery voltage of 4.0 V. Those characteristics were measured during a transmission pulse and are listed in the Table 6-1

Table 6-1 Characteristics for 800 and 900 MHz

Characteristics	800MHz		900MHz)	
	At the maximum power setting	At the minimum power setting	At the maximum power setting	At the minimum power setting
DC Voltage (Volts)	4	4	4	4
DC Current (A)	1.19	0.443	1.25	0.443
Output Power (mW)	582	0.232	601	0.239

6.2. Modulation Characteristics and Necessary Bandwidth -- Pursuant 47 CFR 2.1033(c)13, 2.1047(d) & 2.202

Digitally encoded speech or digital data is transmitted in four sub-channels at a 4 kHz rate using M-ary symbols mapped to predetermined fixed magnitude and phase components within 1 of 3 constellations associated with a particular modulation scheme. Figure 6-2 illustrates symbol mapping to one of the four QPSK sub-channels constellations. Figure 6-3 illustrates symbol mapping to one of the four 16QAM sub-channels constellation. Figure 6-4 illustrates symbol mapping to one of the four 64QAM sub-channels constellation. For Quad-QPSK modulation, this mapping adjusts the amplitude and phase variations of the baseband signal to one of 4 points on the constellation. For Quad-16QAM modulation, this mapping adjusts the amplitude and phase variations of the baseband signal to one of 16 points on the constellation. For Quad-64 modulation, this mapping adjusts the amplitude and phase variations of the baseband signal to one of 64 points on the constellation. The bandwidth of the modulating signals is limited by the pair of modulation limiting low pass filters in U801 (see Figure 4-3 in Exhibit 4.3). These filters serve to limit out-of-band and spurious emissions due to modulation. The necessary bandwidth of the sub-channels is limited to 4.8 kHz by the pair of modulation limiting low pass filters. The transfer response of these filters is depicted in Figure 6-1 where the filter excess bandwidth coefficient of 0.2 is shown. This excess bandwidth leads to the necessary bandwidth calculation of $(1 + 0.2) \times (4 \text{ kHz}) = 4.8 \text{ kHz}$. Since the sub-channels are spaced 4.5 kHz apart, the necessary bandwidth of the composite 4 sub-channel symbol streams is $4.8 + (3 \times 4.5) = 18.3 \text{ kHz}$.

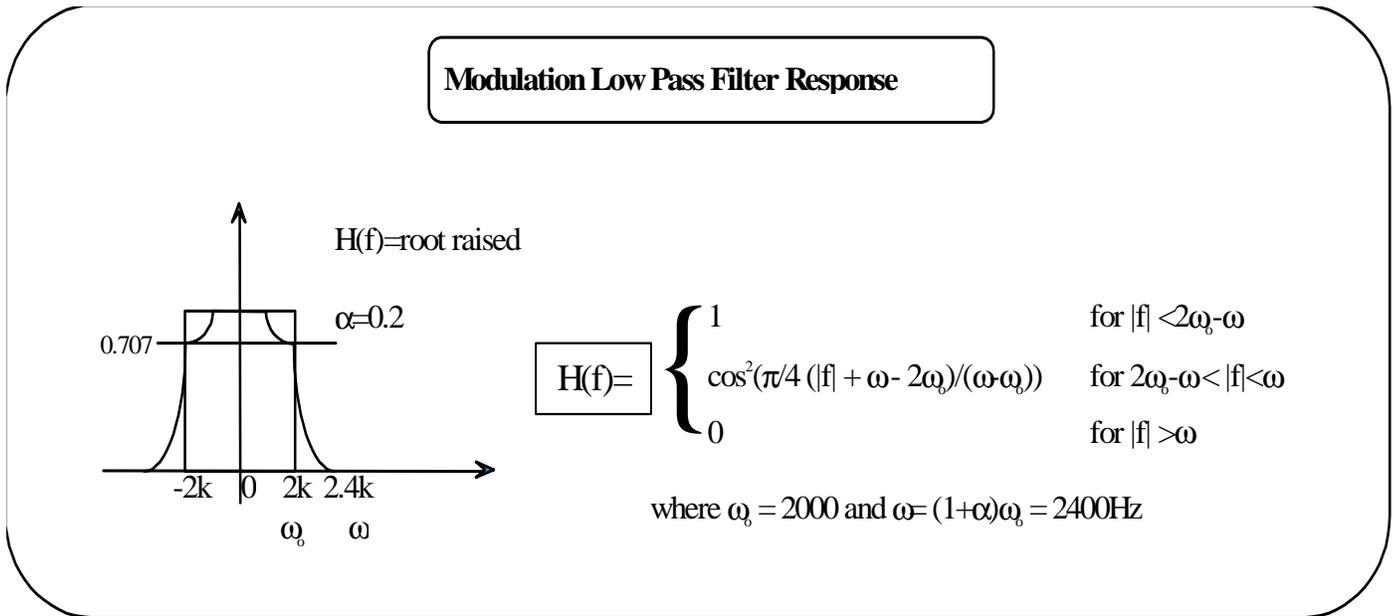


Figure 6-1: Modulation Low Pass Filter Response

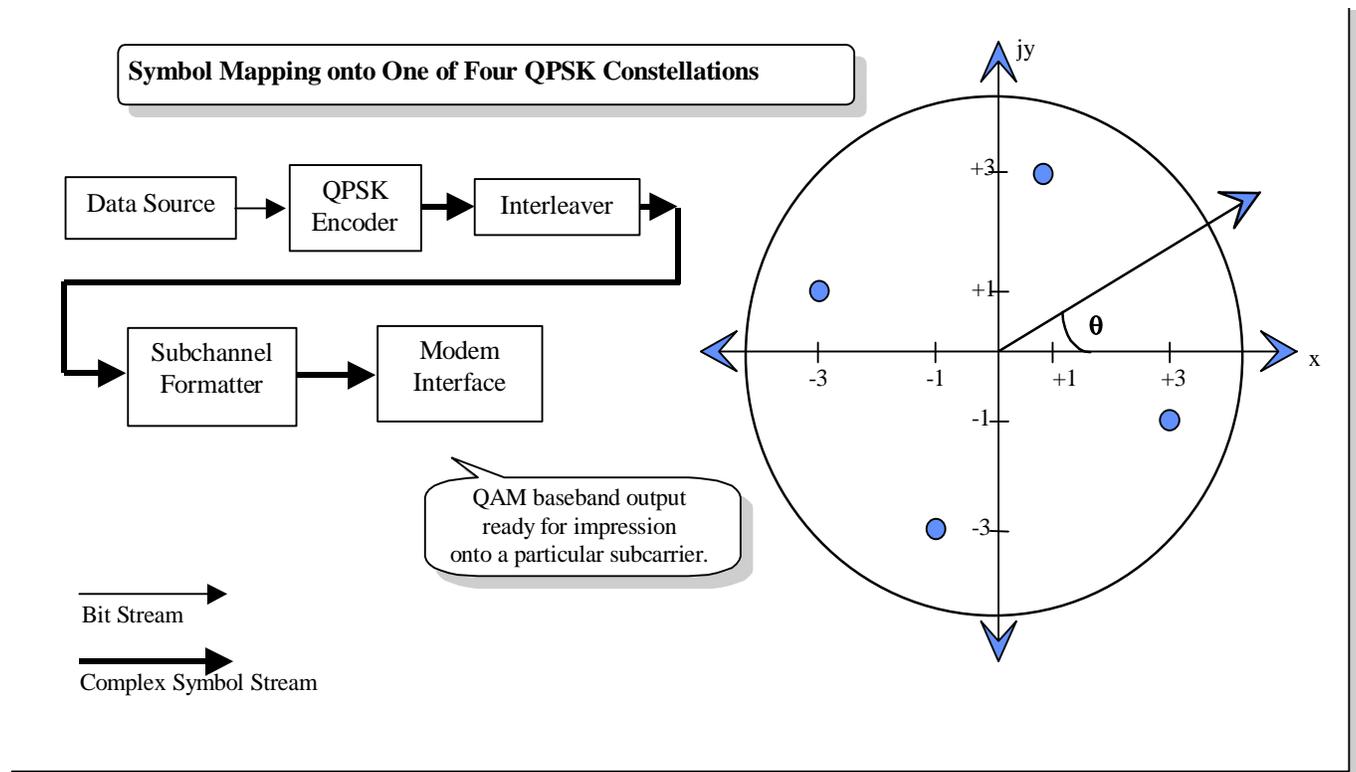


Figure 6-2: Symbol Mapping onto One of Four QPSK Constellations

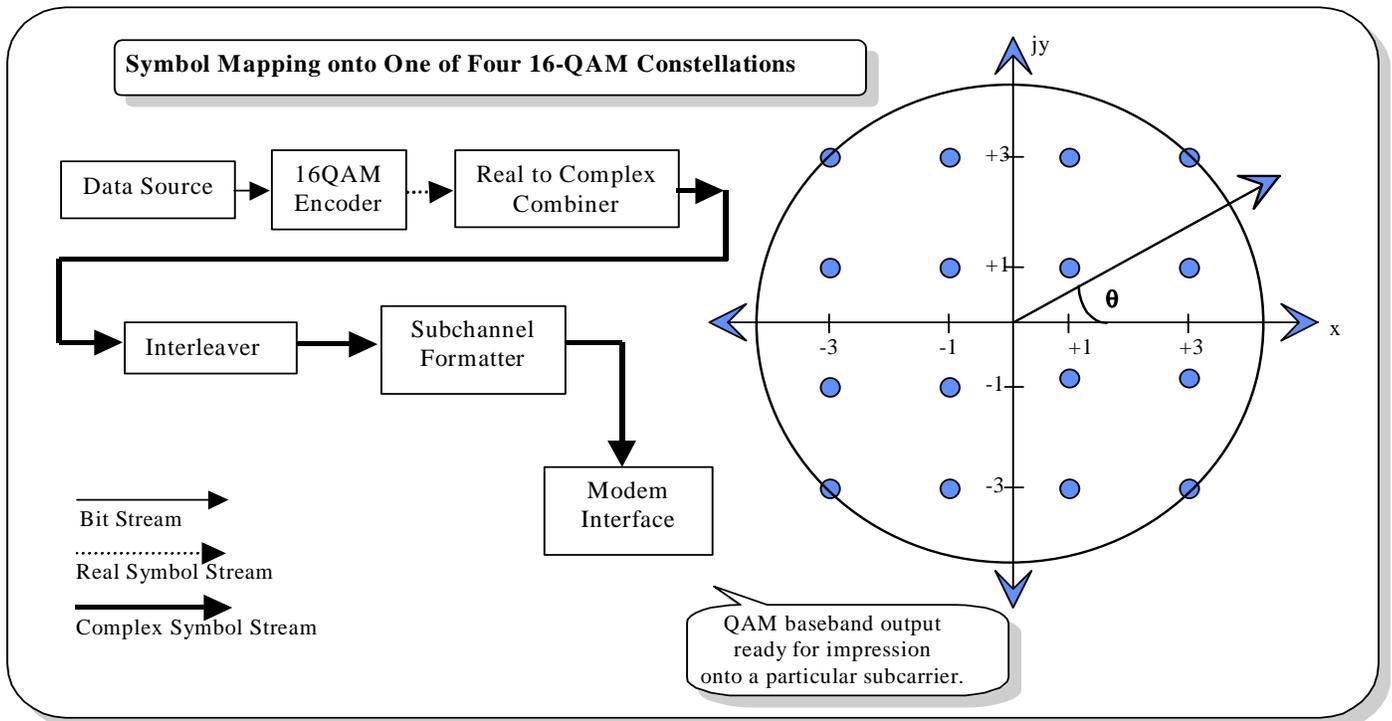


Figure 6-3: Symbol Mapping onto One of Four 16-QAM Constellations

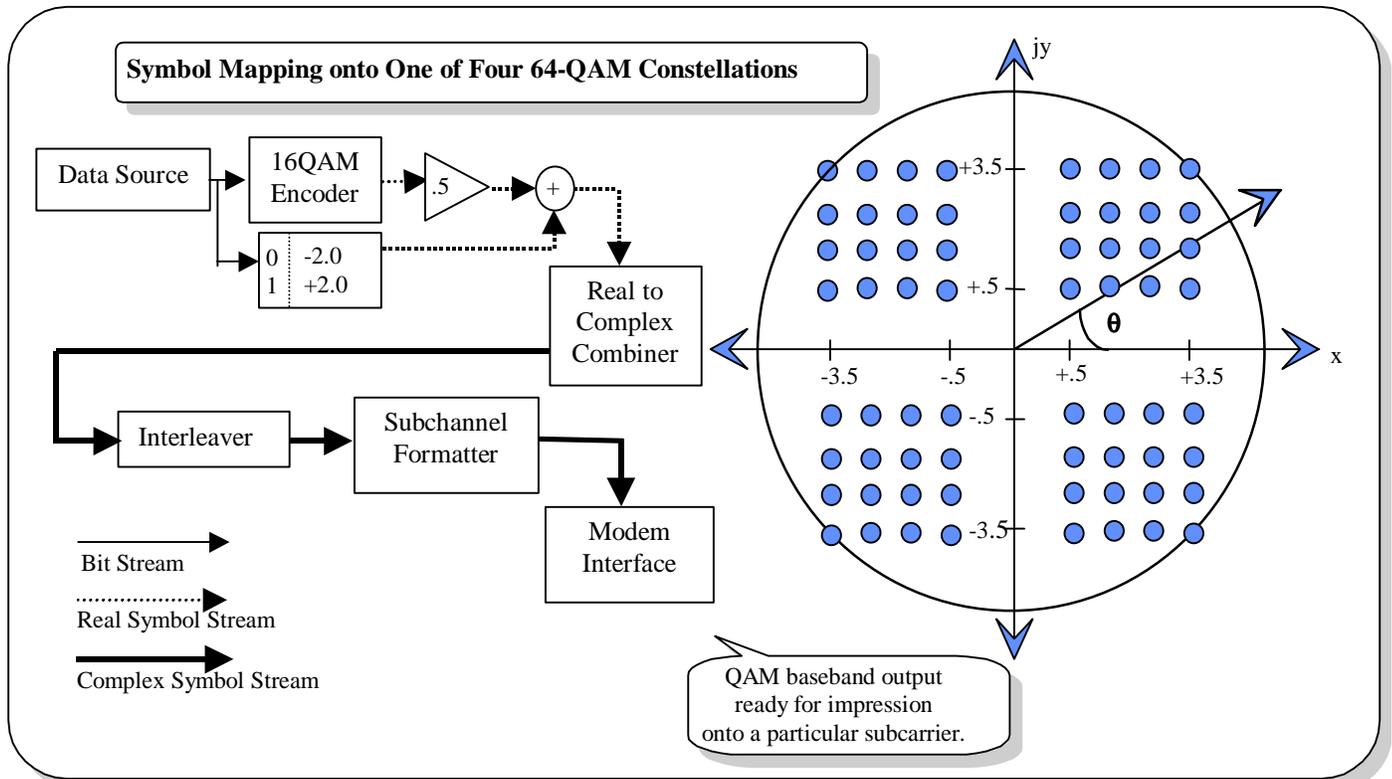


Figure 6-4: Symbol Mapping onto One of Four 64-QAM Constellations

6.3. Emission Mask -- Pursuant 47 CFR 2.1049(h) & 90.210(m)

The method described in paragraph 7.2 was employed with the following conditions:

For Quad-QPSK Modulation:

32K Bits Per Second Pseudo-Random Digital Modulation.

Vertical division: 10 dB/div.

Carrier Reference: Carrier Reference 0 dB corresponds to maximum and minimum peak output power settings, respectively.

For Quad-16QAM Modulation:

64K Bits Per Second Pseudo-Random Digital Modulation

Vertical: 10 dB/div

Carrier Reference: Carrier Reference 0 dB corresponds to maximum and minimum peak output power settings, respectively.

For Quad-64QAM Modulation:

96K Bits Per Second Pseudo-Random Digital Modulation

Vertical: 10 dB/div

Carrier Reference: Carrier Reference 0 dB corresponds to maximum and minimum peak output power settings, respectively.

In Figures 6-5 through Figure 6-28, one trace was used to capture transmitter performance, measured using a resolution bandwidth of 300 Hz, while the reference level was obtained by another trace, using a resolution bandwidth of 30 kHz. A third trace shows the applicable emission mask.

6.3.1 800 MHz Band Operation Measured Data

Refer to Figures 6-5 and 6-6 for Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g).

Refer to Figures 6-9 and 6-10 for Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g).

Refer to Figures 6-13 and 6-14 for Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g).

Refer to Figures 6-7 and 6-8 for Quad-QPSK performance relative to mask 47 CFR 90.691.

Refer to Figures 6-11 and 6-12 for Quad-16QAM performance relative to mask 47 CFR 90.691.

Refer to Figures 6-15 and 6-16 for Quad-64QAM performance relative to mask 47 CFR 90.691.

FCC Limits

a.) Per 47CFR 90.210(g)

- (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5 kHz up to and including 10 kHz:

At least $83 \log_{10}(f_d/5)$ decibels.

- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 10 kHz up to and including 250 percent of the authorized bandwidth:

At least $116 \log_{10}(f_d/6.1)$ decibels or 50 plus $10 \log_{10}$ (Unmodulated Carrier Power) decibels or 70 decibels, whichever is lesser attenuation.

- (3) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth:

At least 43 plus $10 \log_{10}$ (Output Power in Watts) decibels or 80 decibels, whichever is lesser attenuation.

b) Per EA SMR Emission Mask, 47 CFR 90.691(a)

Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees.

- (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center channel of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
- (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels (i.e. -13 dBm) or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

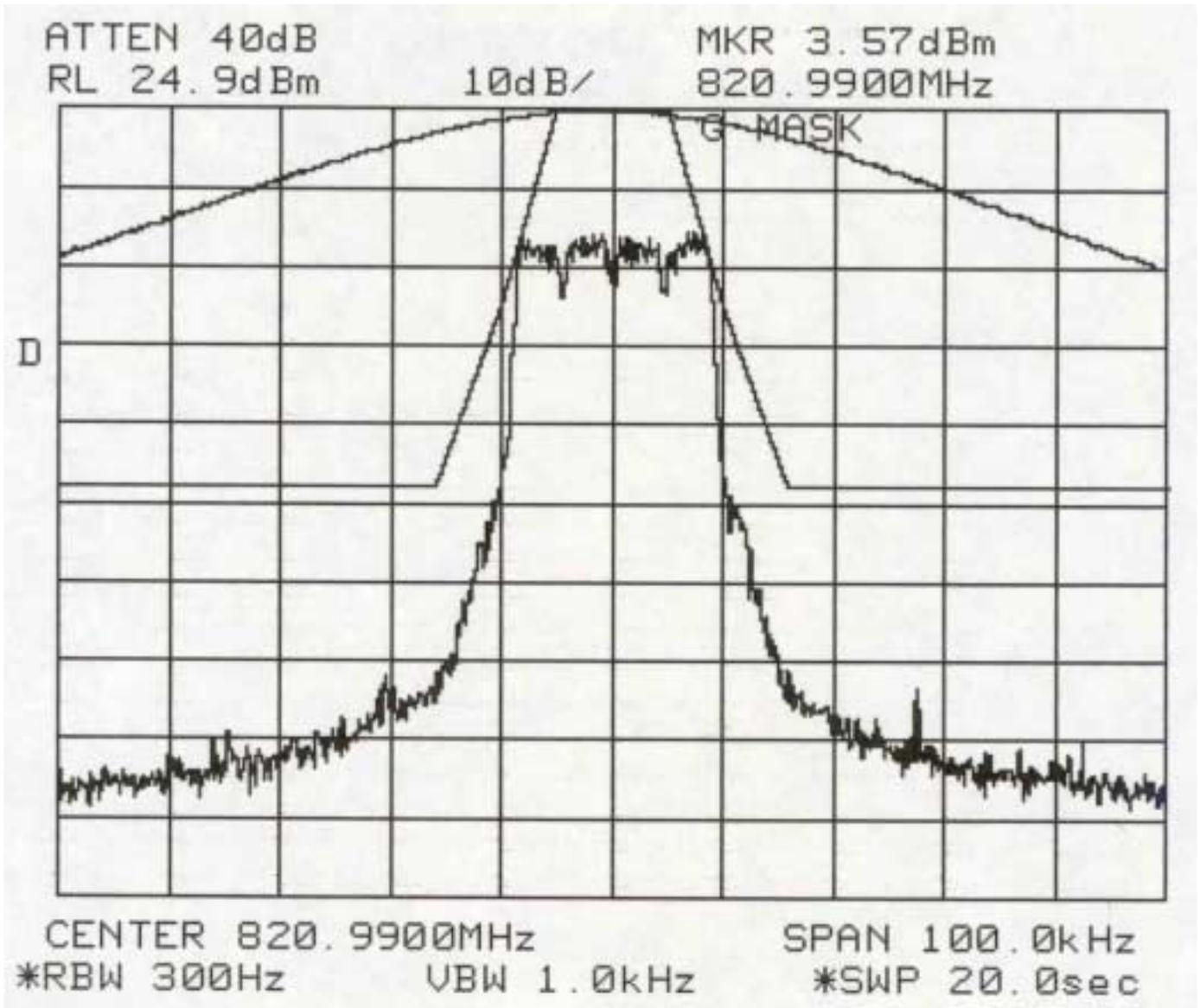


Figure 6-5: Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g) (MAXIMUM POWER SETTING)

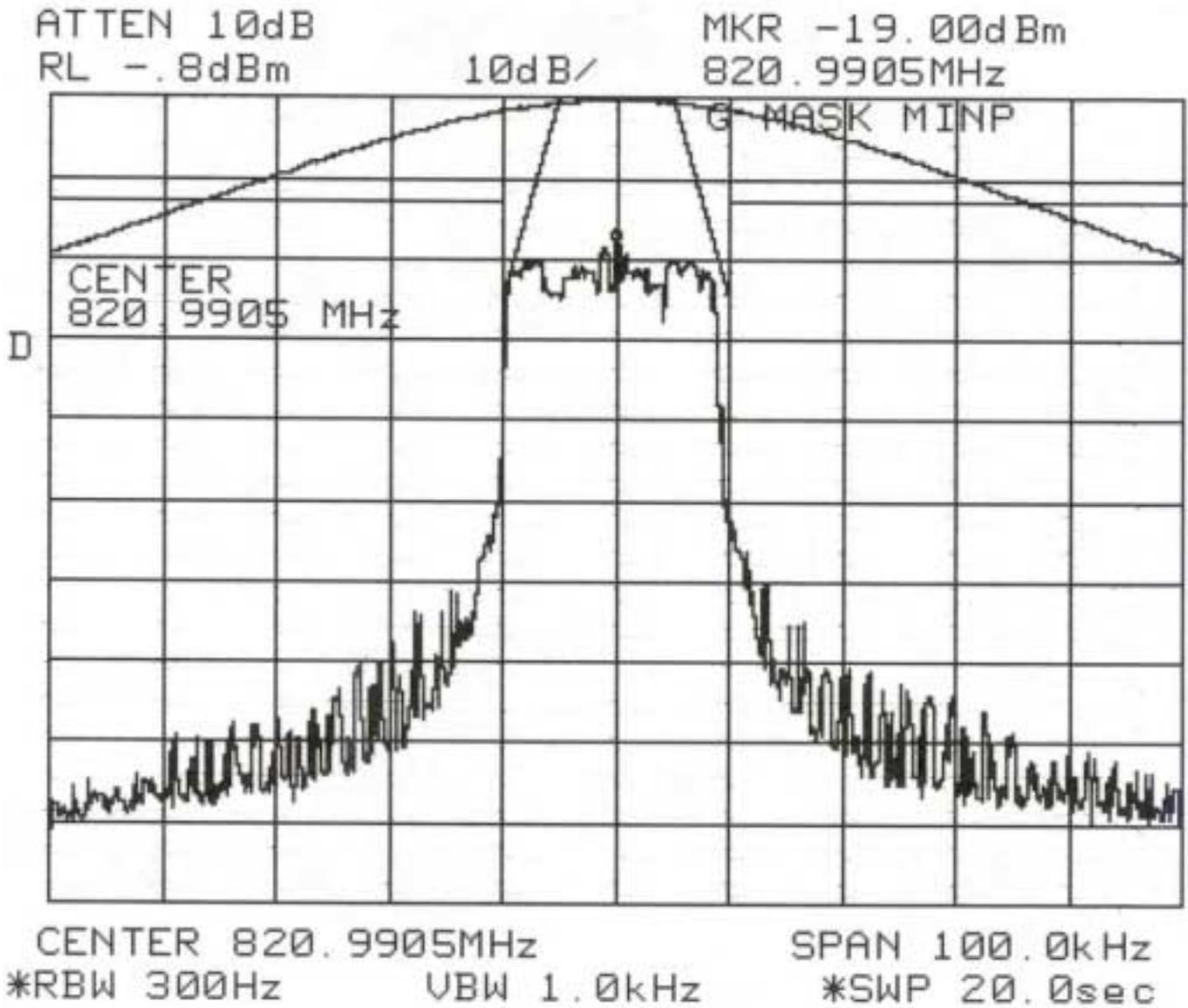


Figure 6-6: Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING)

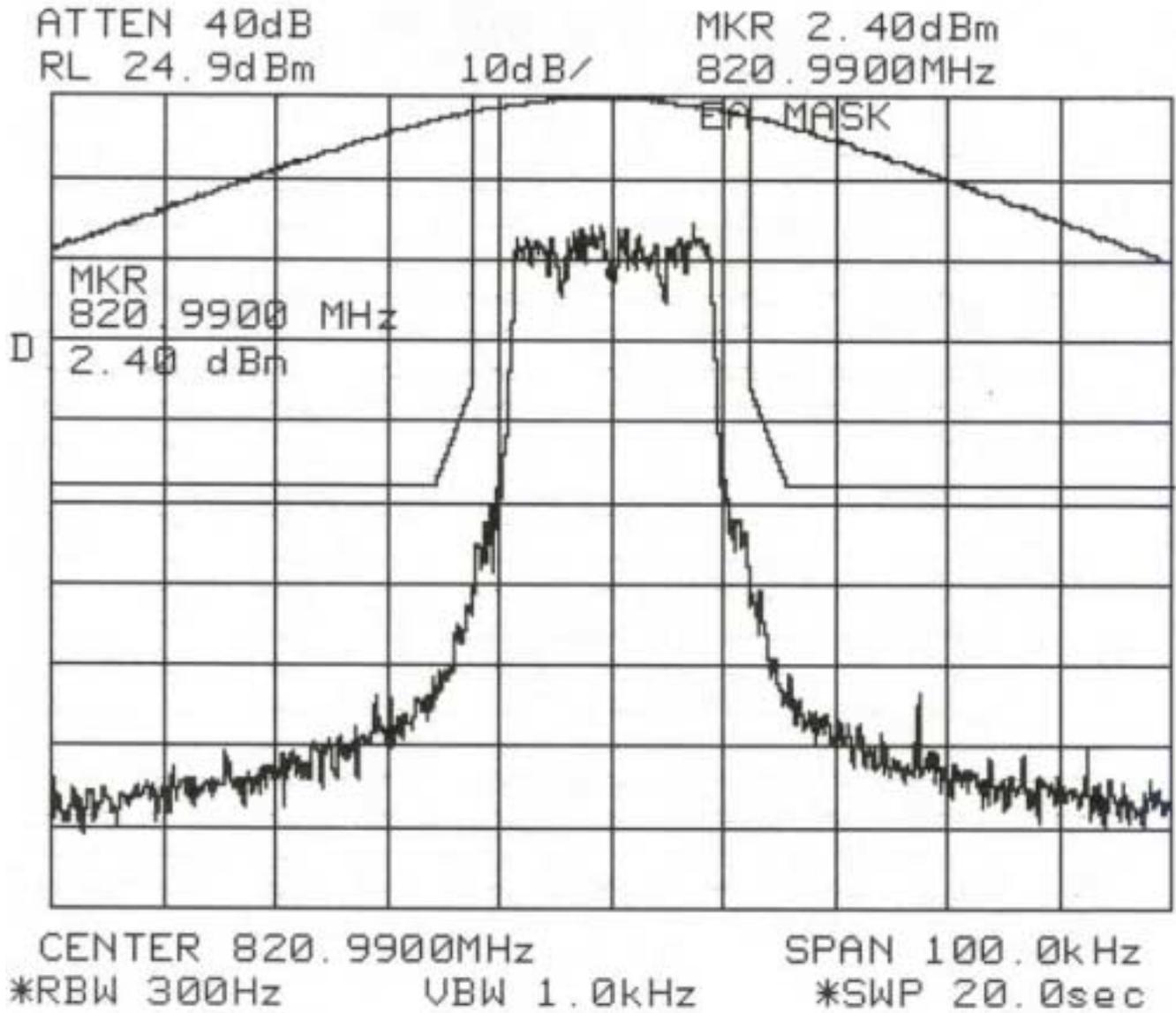


Figure 6-7: Quad-QPSK Modulation performance relative to mask 47 CFR 90.691. (MAXIMUM POWER SETTING)

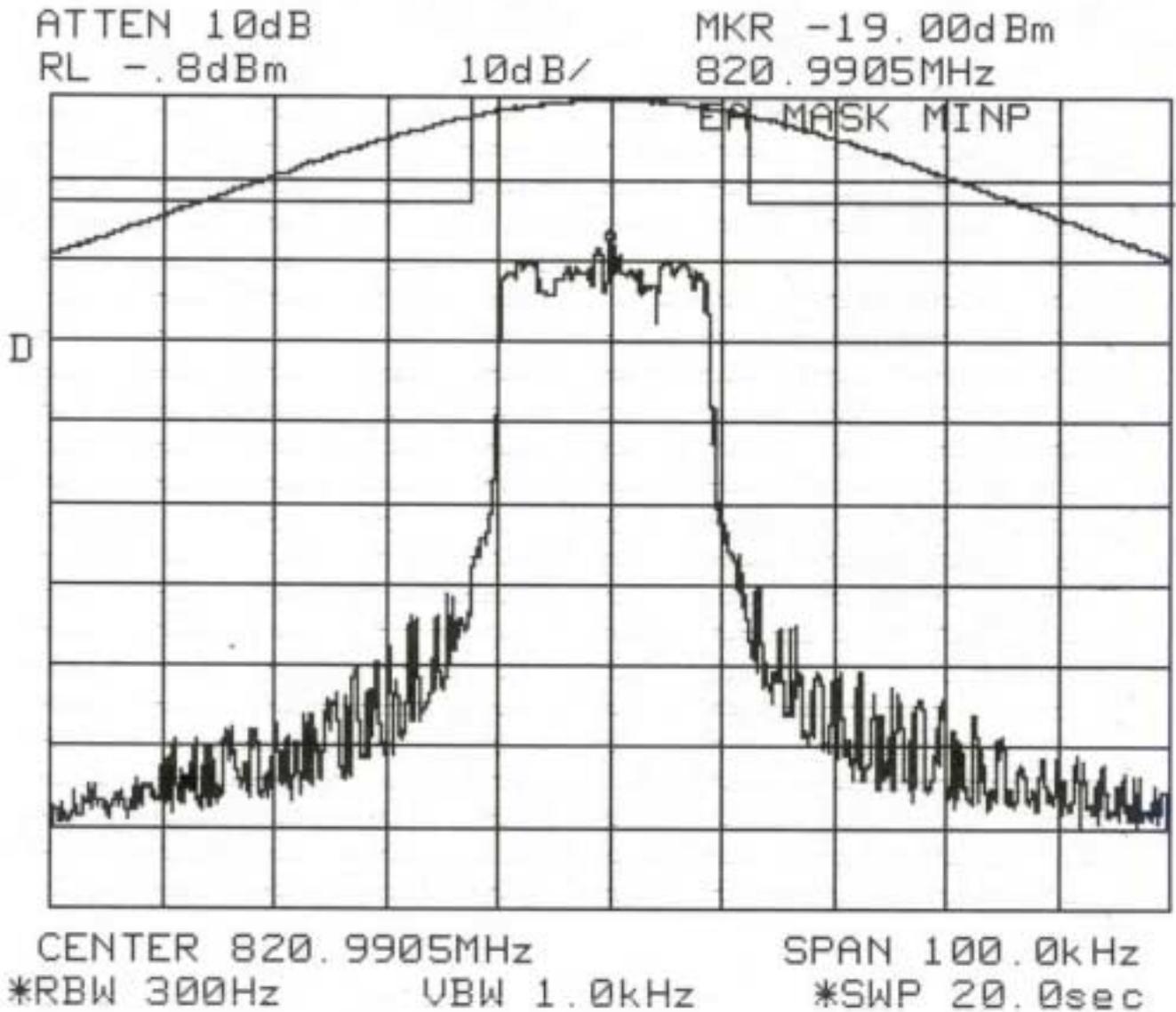


Figure 6-8: Quad-QPSK Modulation performance relative to mask 47 CFR 90.691. (MINIMUM POWER SETTING)

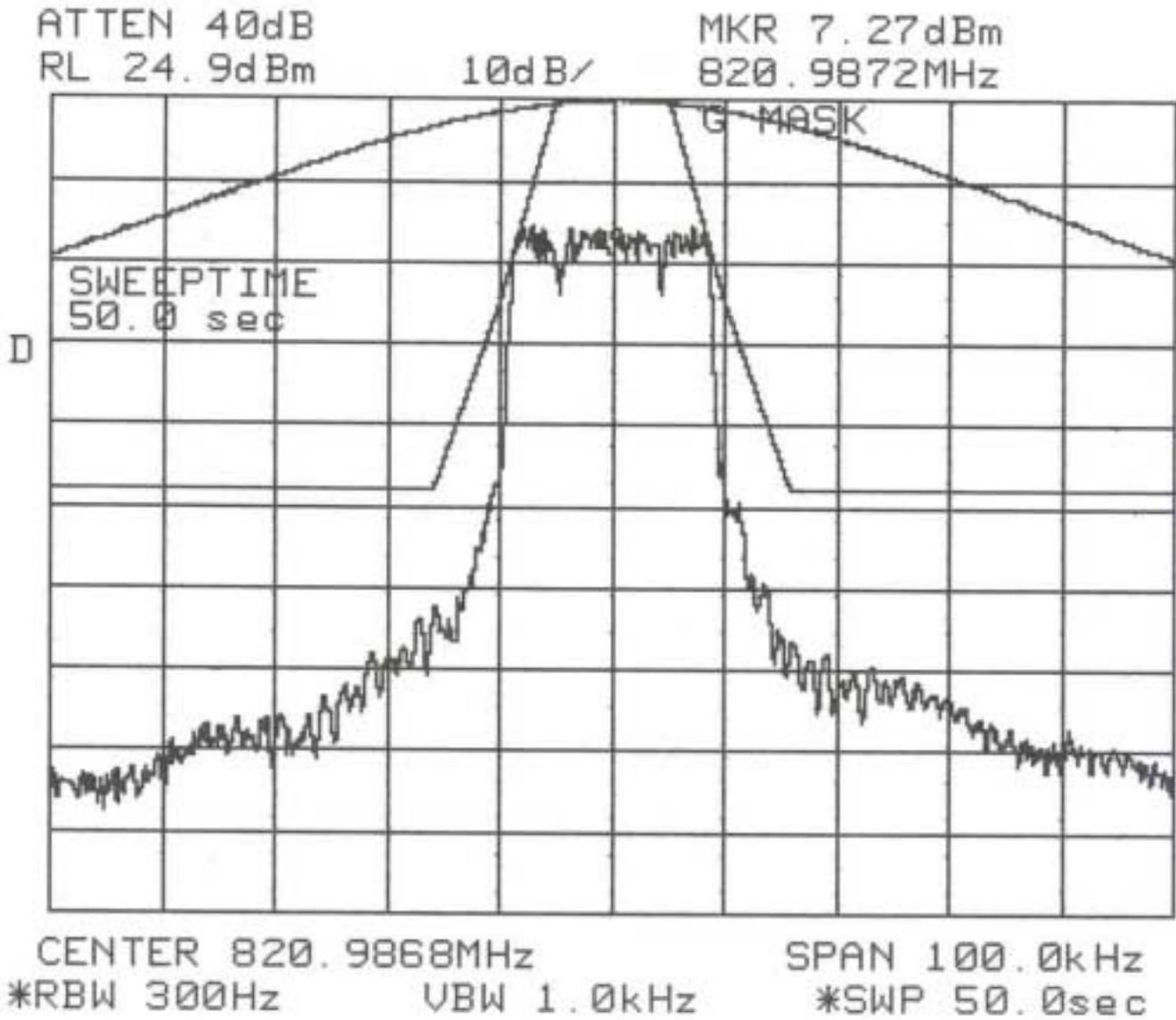


Figure 6-9: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g) (MAXIMUM POWER SETTING)

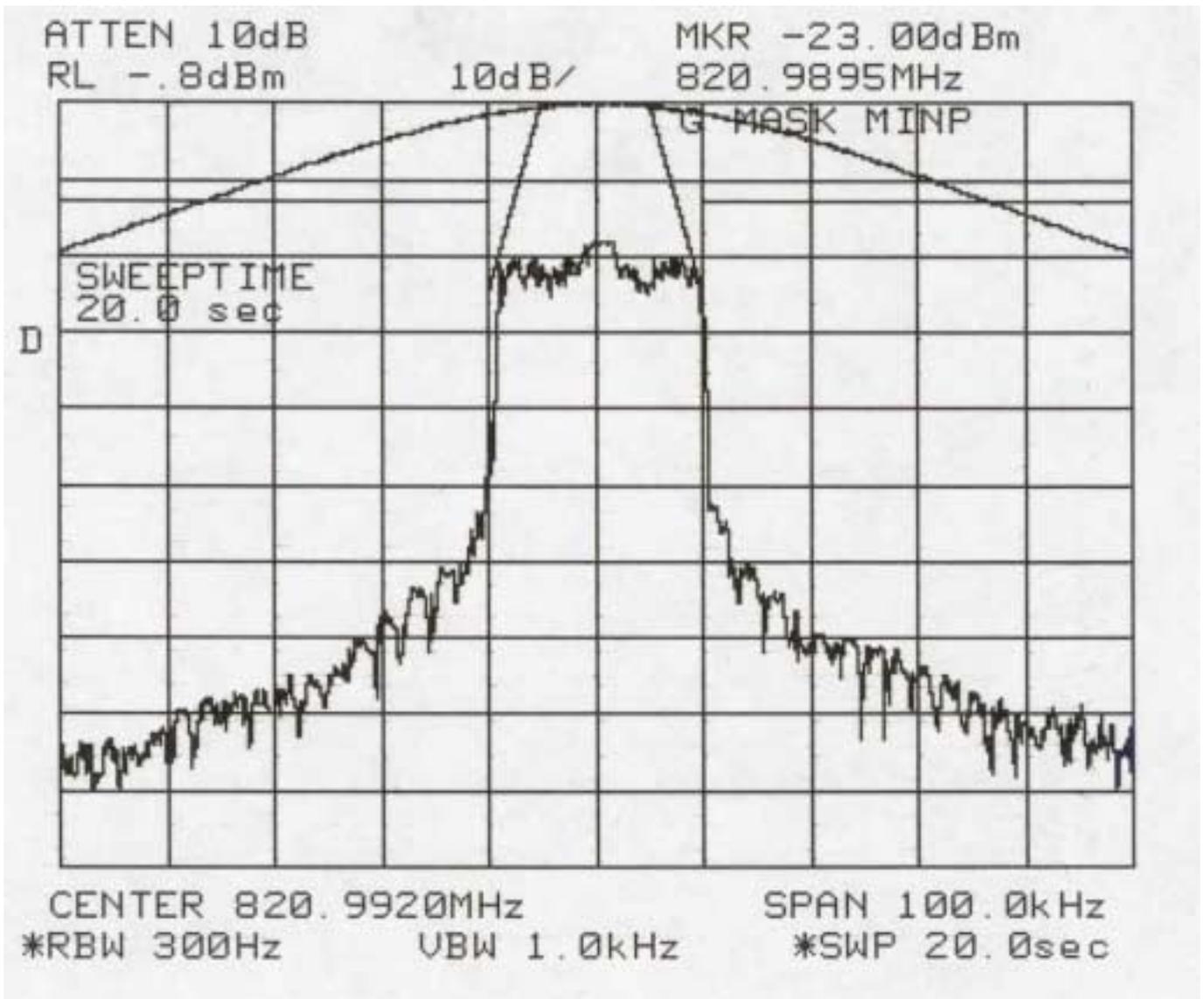


Figure 6-10: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING)

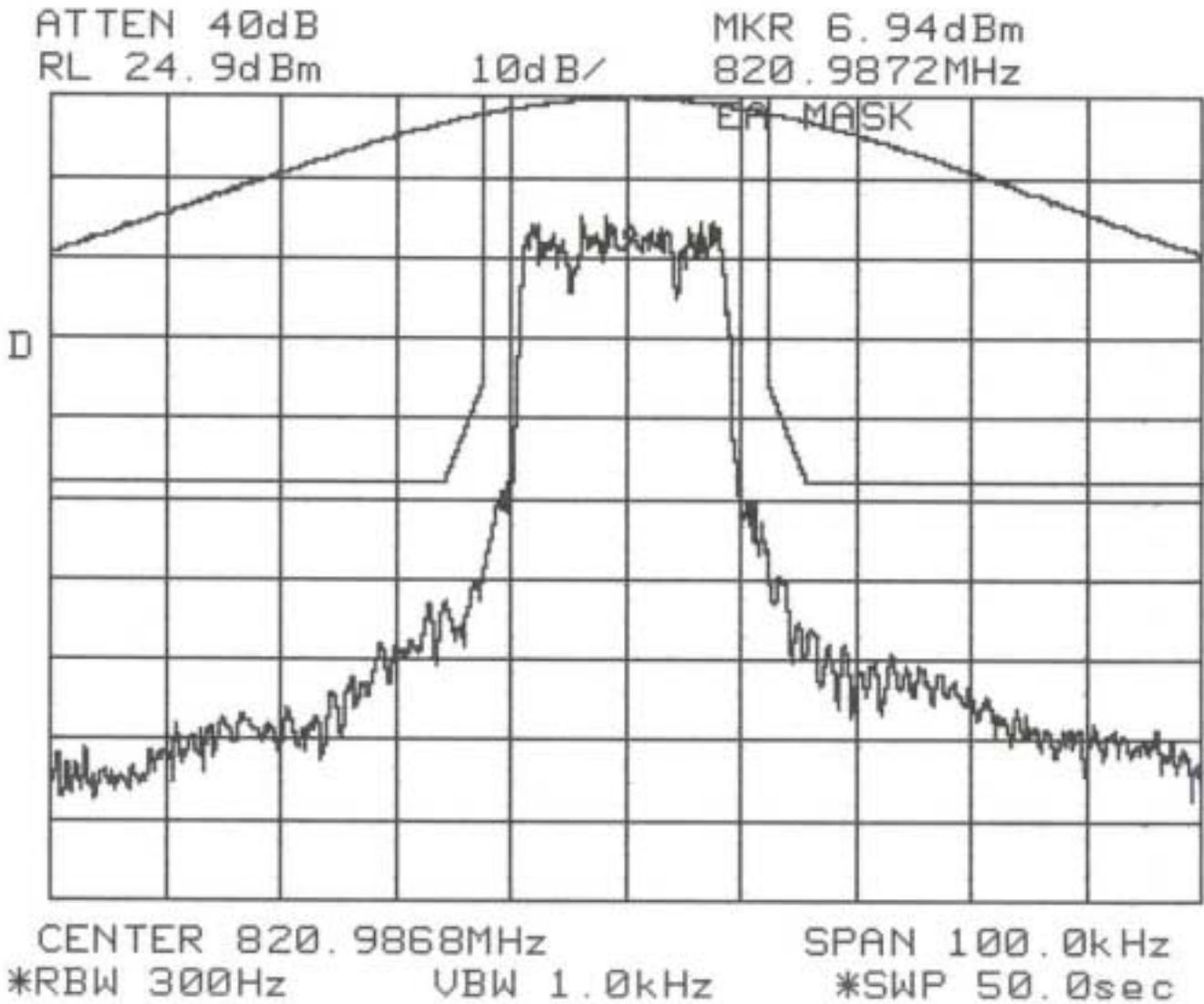


Figure 6-11: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691. (MAXIMUM POWER SETTING)

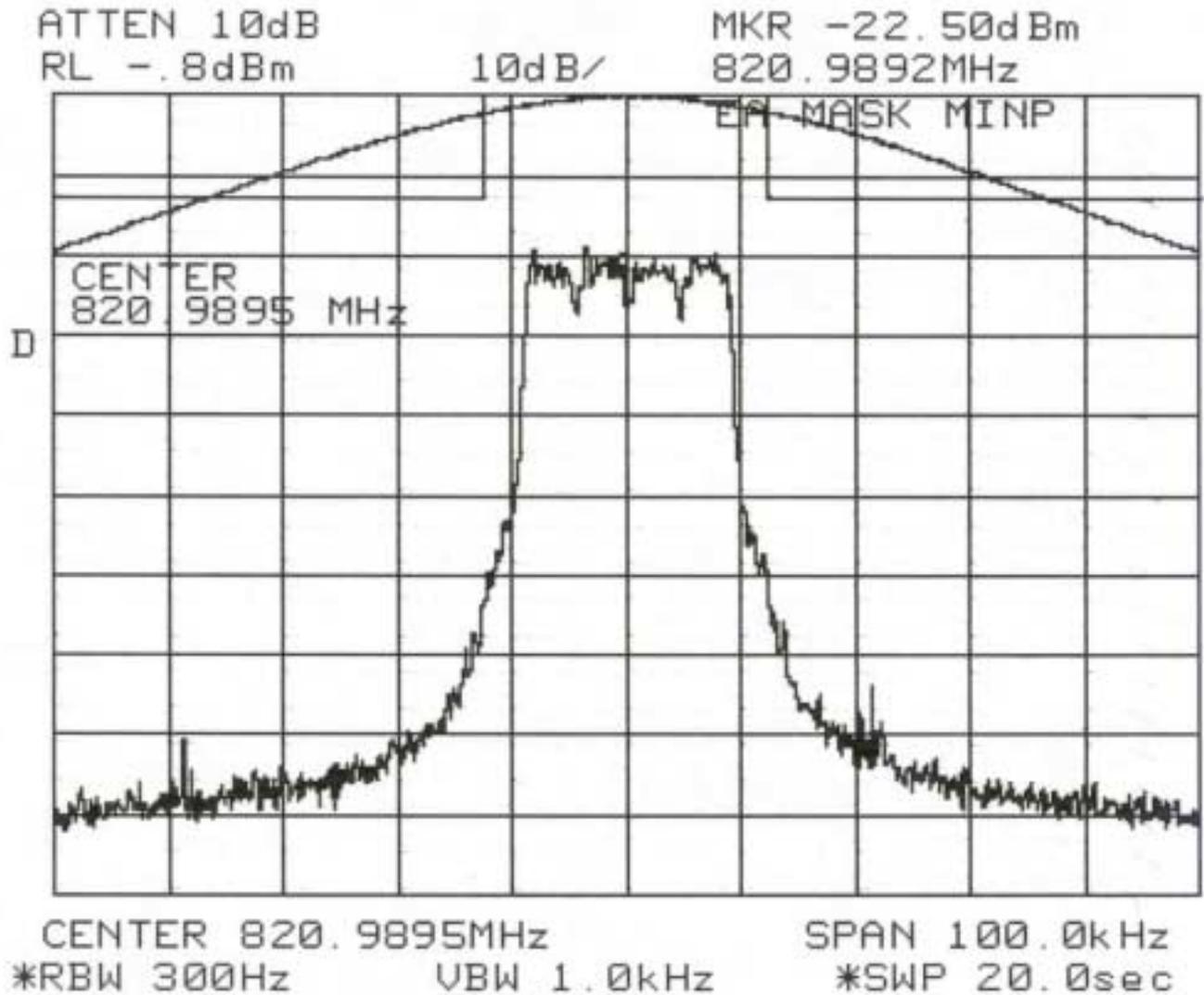


Figure 6-12: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691. (MINIMUM POWER SETTING)

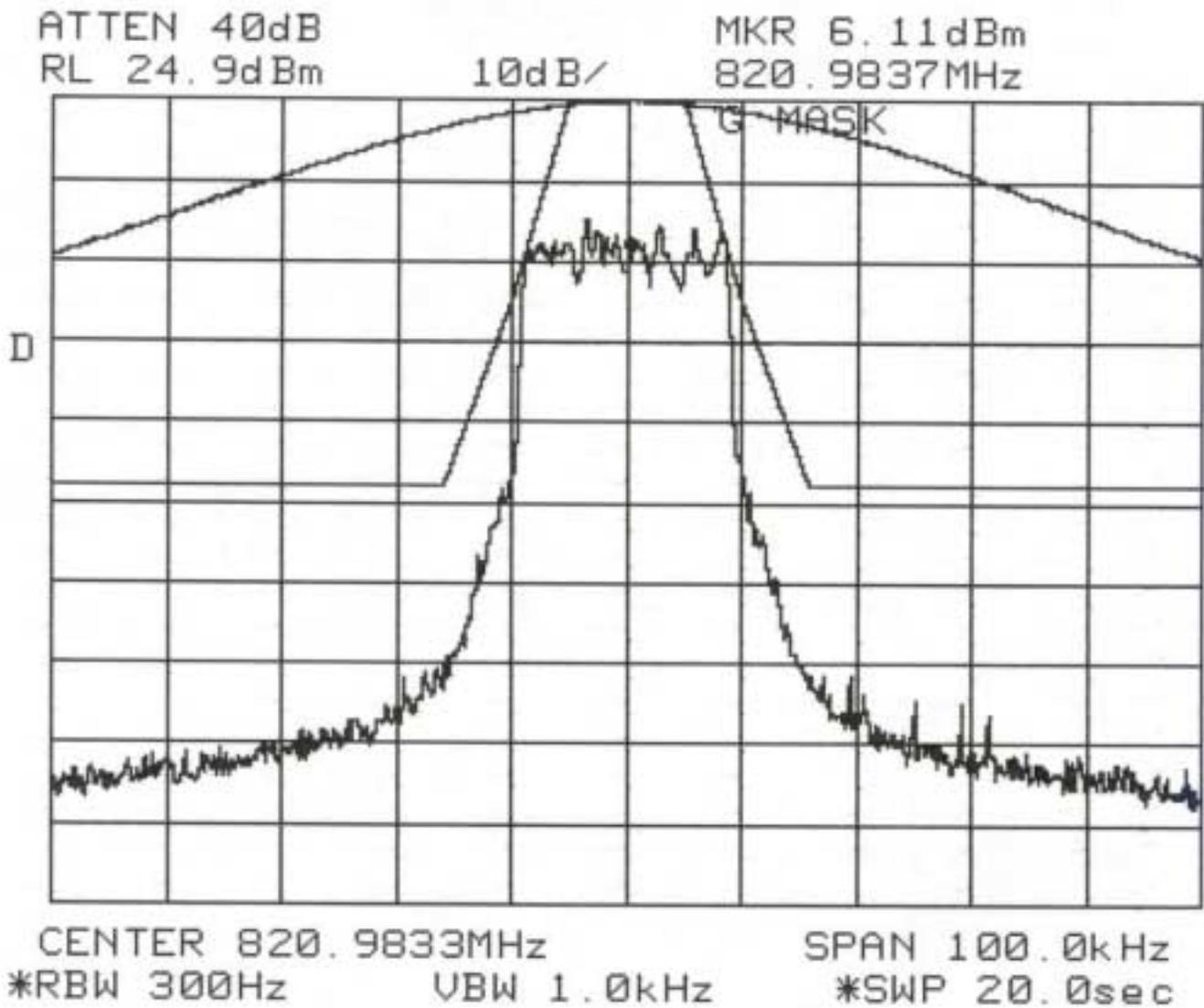


Figure 6-13: Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g) (MAXIMUM POWER SETTING)

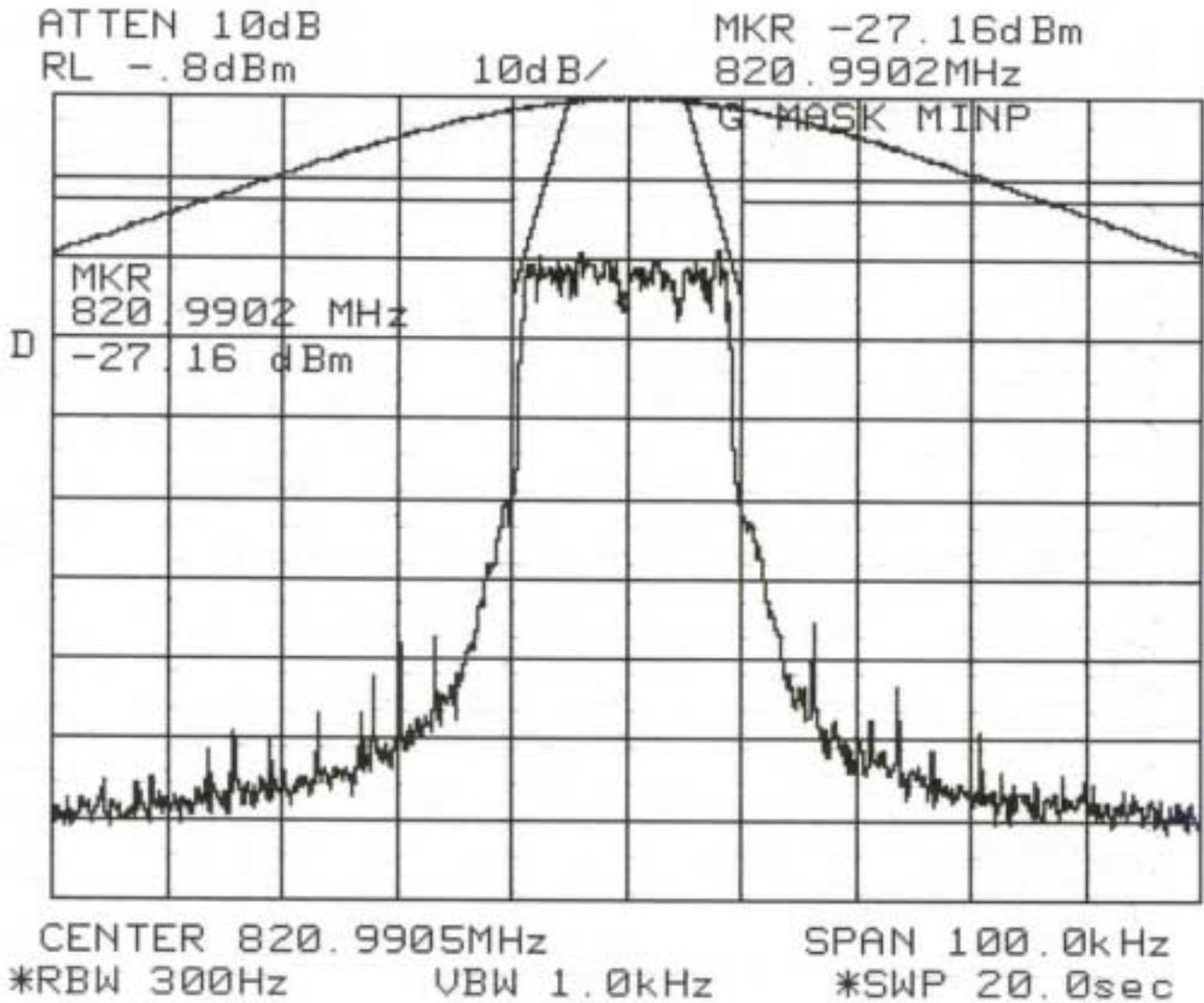
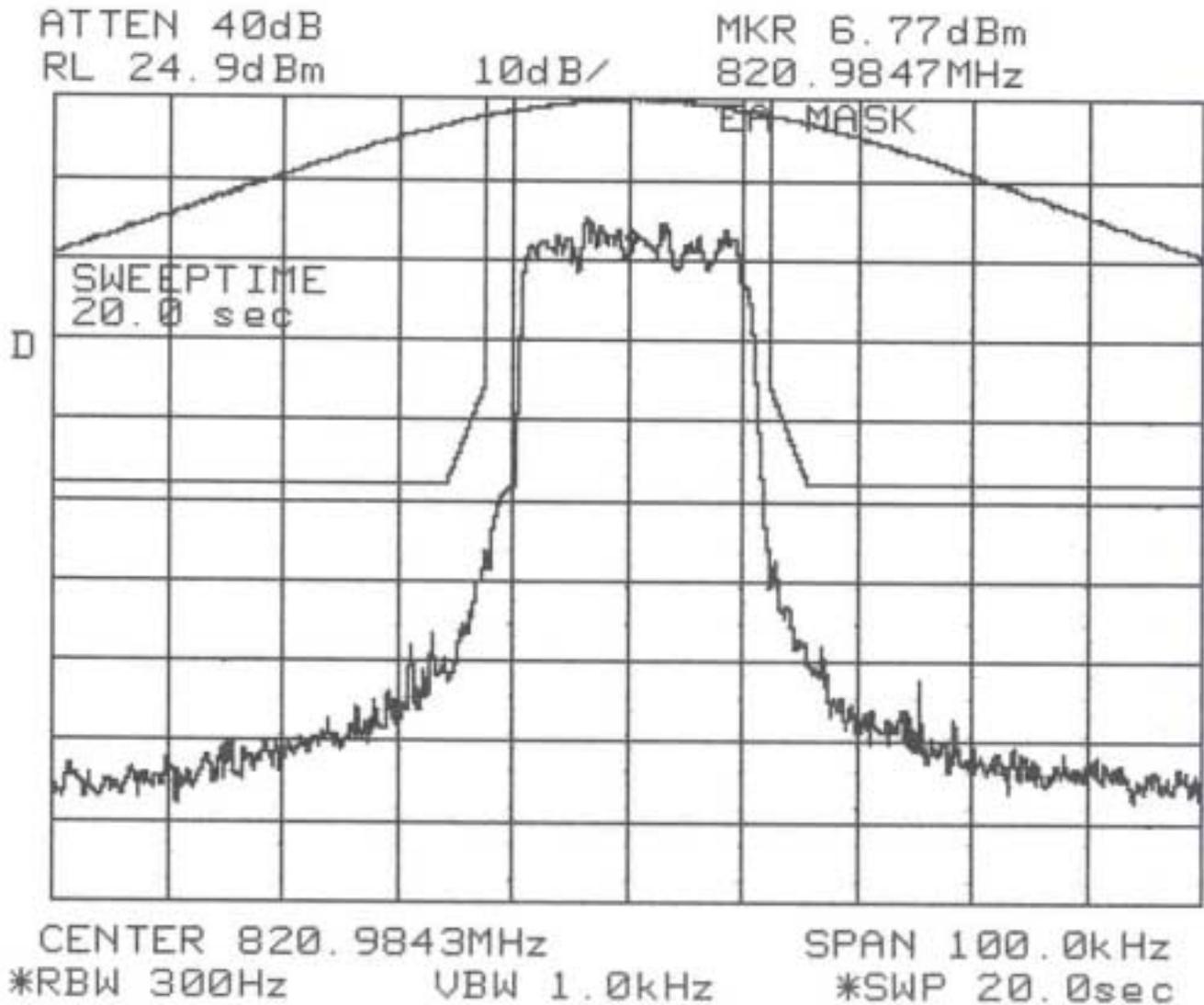


Figure 6-14: Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING)



**Figure 6-15: Quad-64QAM Modulation performance relative to mask 47 CFR 90.691.
(MAXIMUM POWER SETTING)**

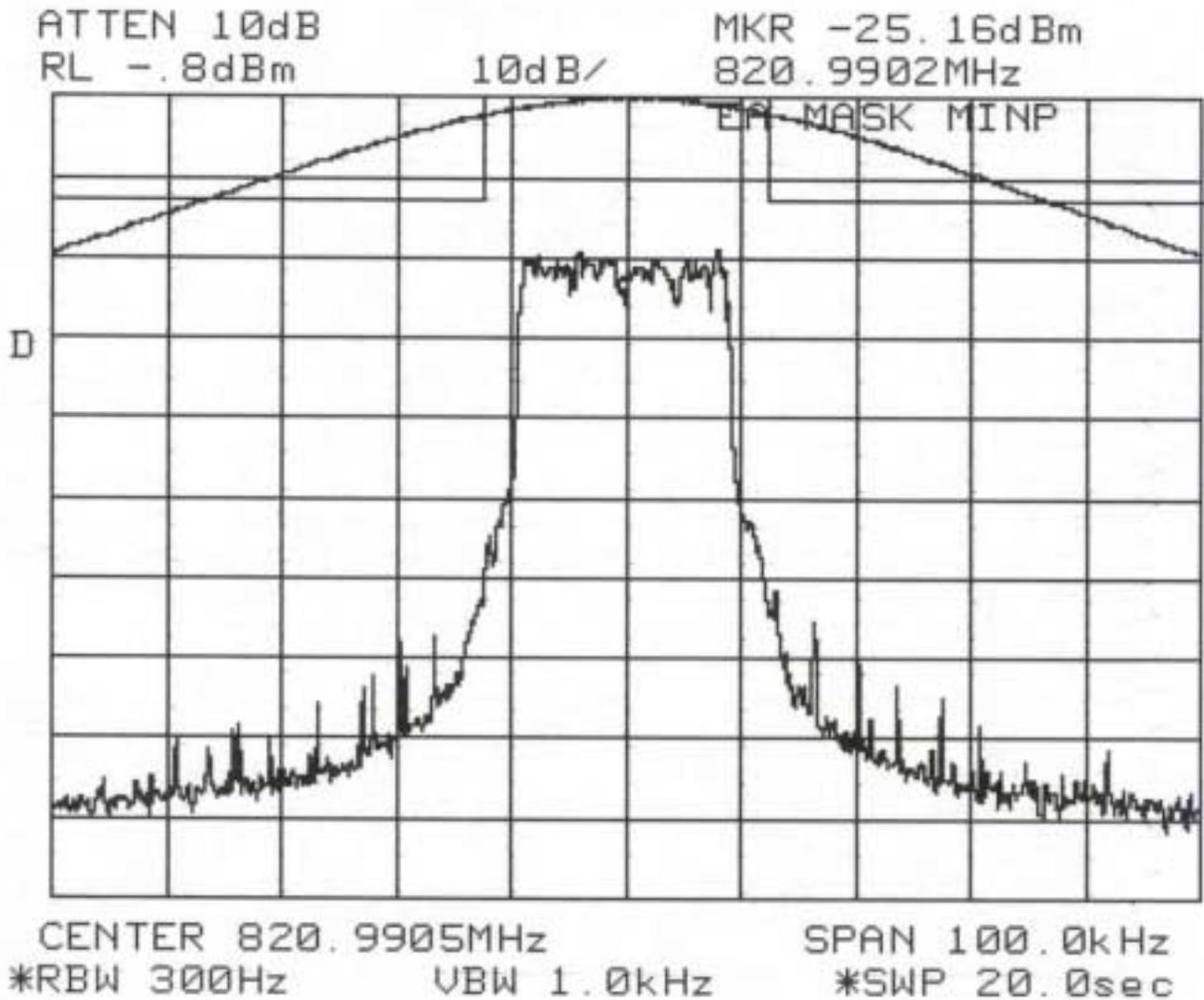


Figure 6-16: Quad-64QAM Modulation performance relative to mask 47 CFR 90.691. (MINIMUM POWER SETTING)

6.3.2. 900 MHz Band Operation Measured Data

Refer to Figures 6-17 and 6-18 for Quad-QPSK Modulation performance relative to mask 47 CFR 90.669(a).

Refer to Figures 6-19 and 6-20 for Quad-16QAM Modulation performance relative to mask 47 CFR 90.669(a).

Refer to Figures 6-21 and 6-22 for Quad-64QAM Modulation performance relative to mask 47 CFR 90.669(a).

Limits per 47 CFR 90.669(a)

On any frequency in an Metropolitan Trade Area (MTA) licensee's spectrum block that is adjacent to a non-MTA frequency, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(\text{Output Power in Watts})$ decibels or 80 decibels, whichever is lesser attenuation.

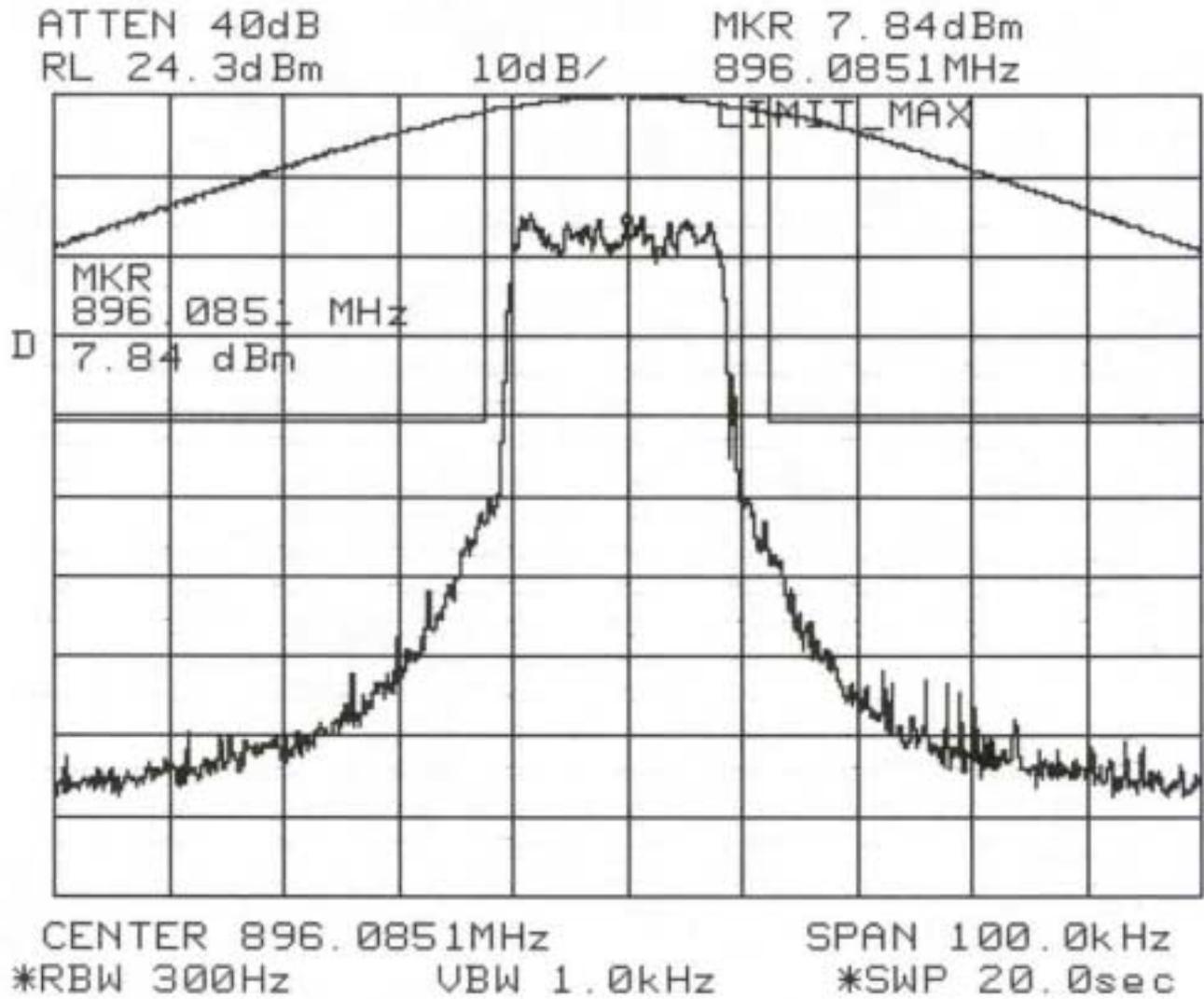


Figure 6-17: Quad-QPSK Modulation performance relative to mask 47 CFR 90.669(a) (MAXIMUM POWER SETTING)

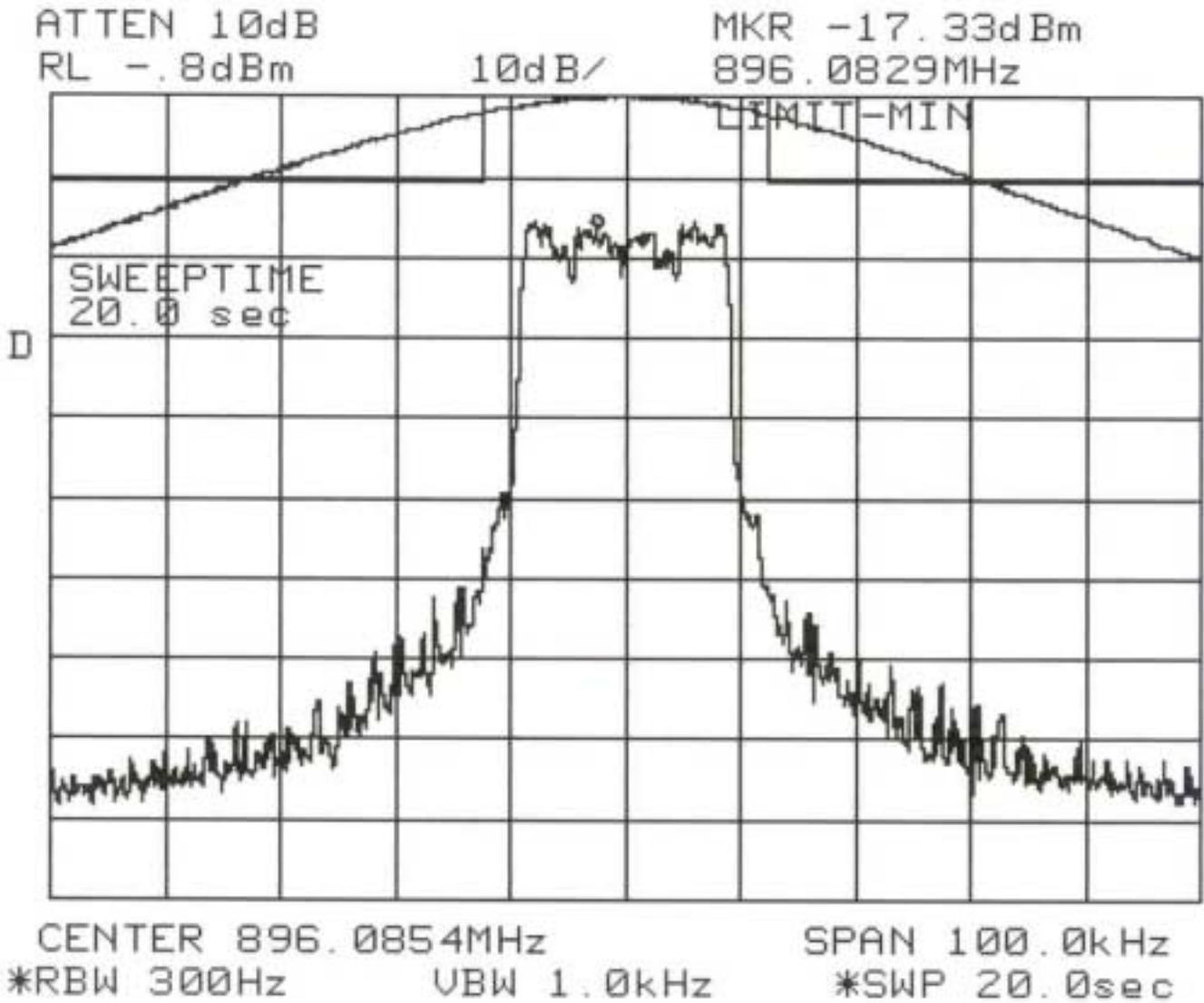


Figure 6-18: Quad-QPSK Modulation performance relative to mask 47 CFR 90.669(a) (MINIMUM POWER SETTING)

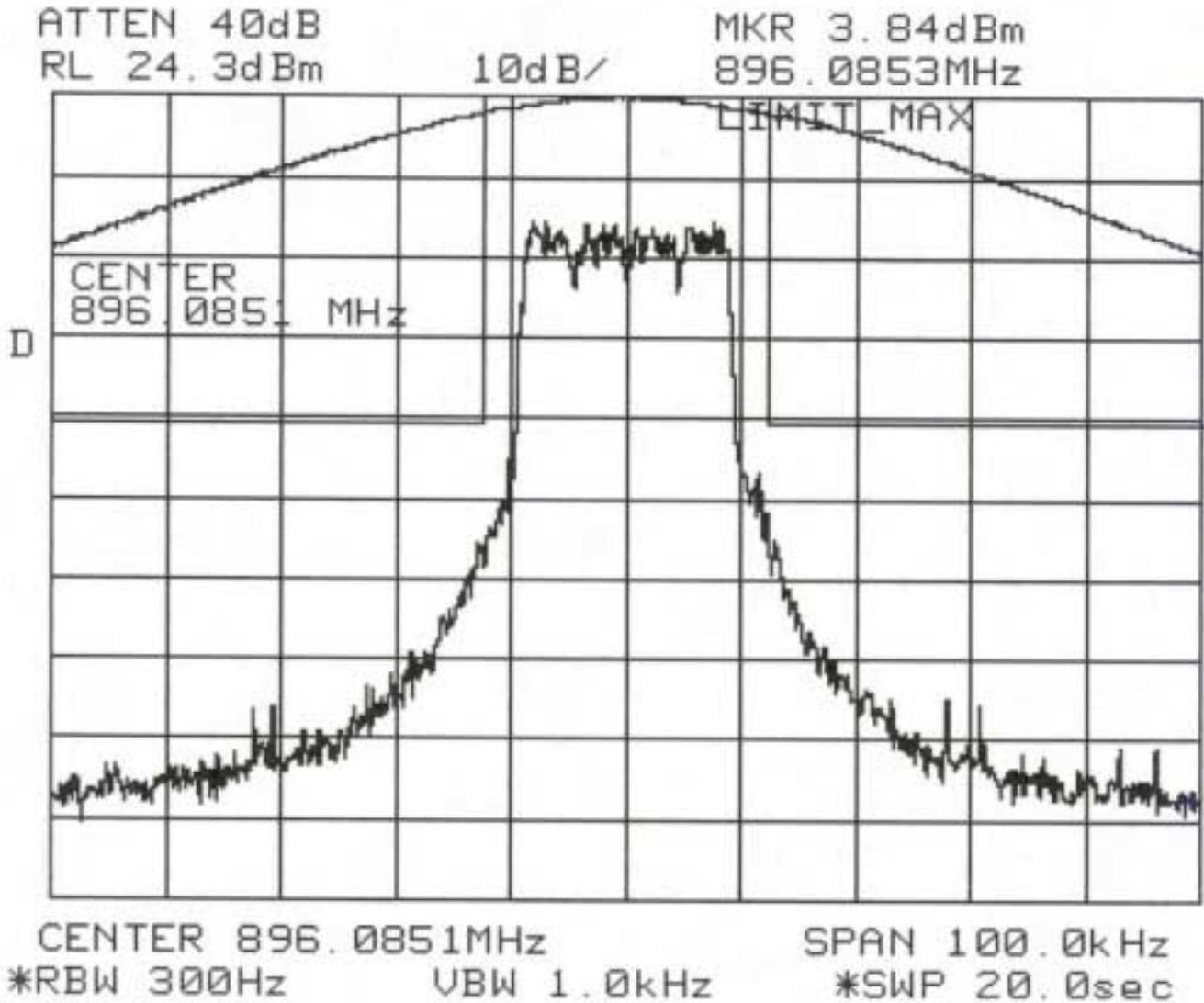


Figure 6-19: Quad-16QAM Modulation performance relative to mask 47 CFR 90.669(a) (MAXIMUM POWER SETTING)

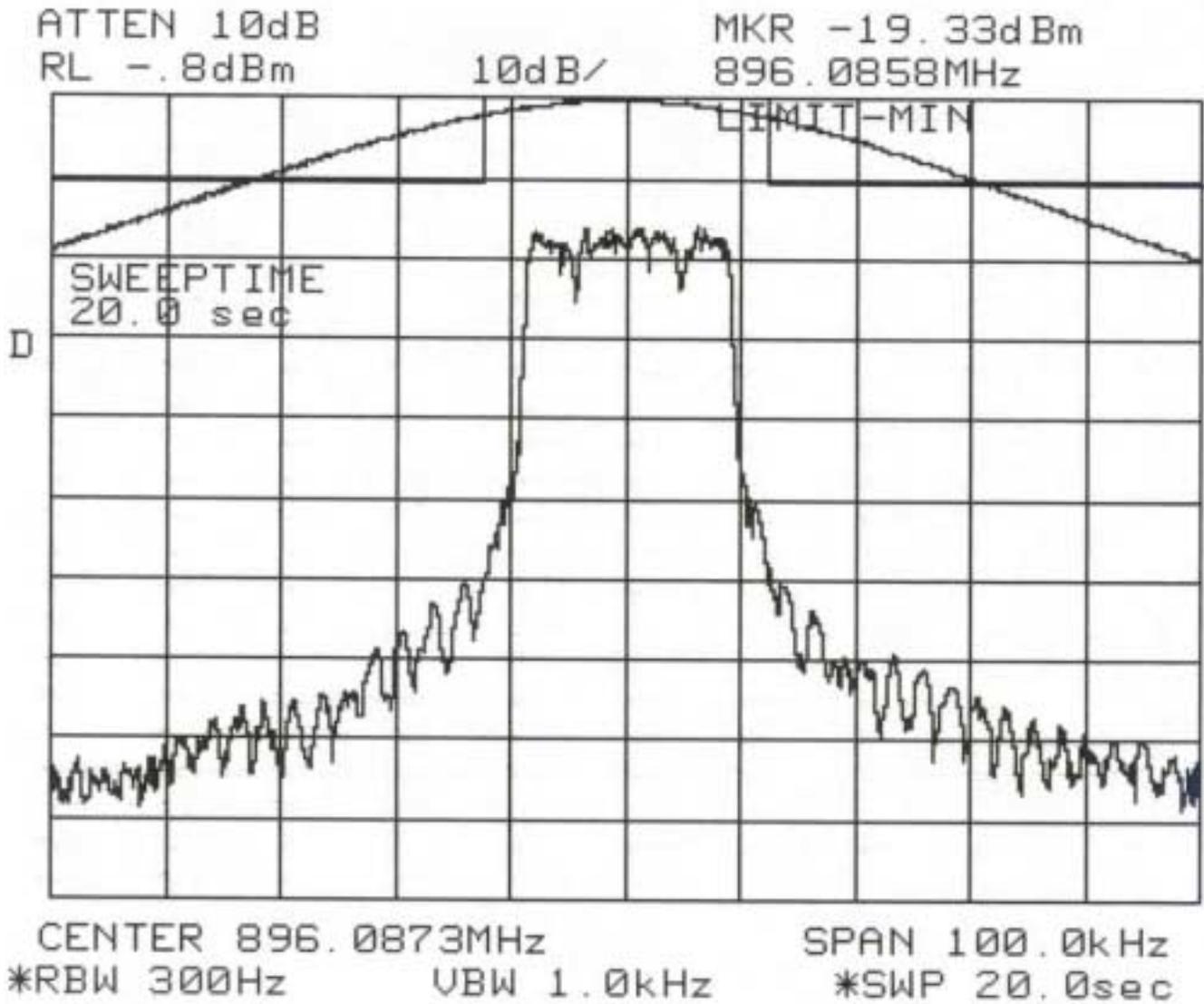


Figure 6-20: Quad-16QAM Modulation performance relative to mask 47 CFR 90.669(a) (MINIMUM POWER SETTING)

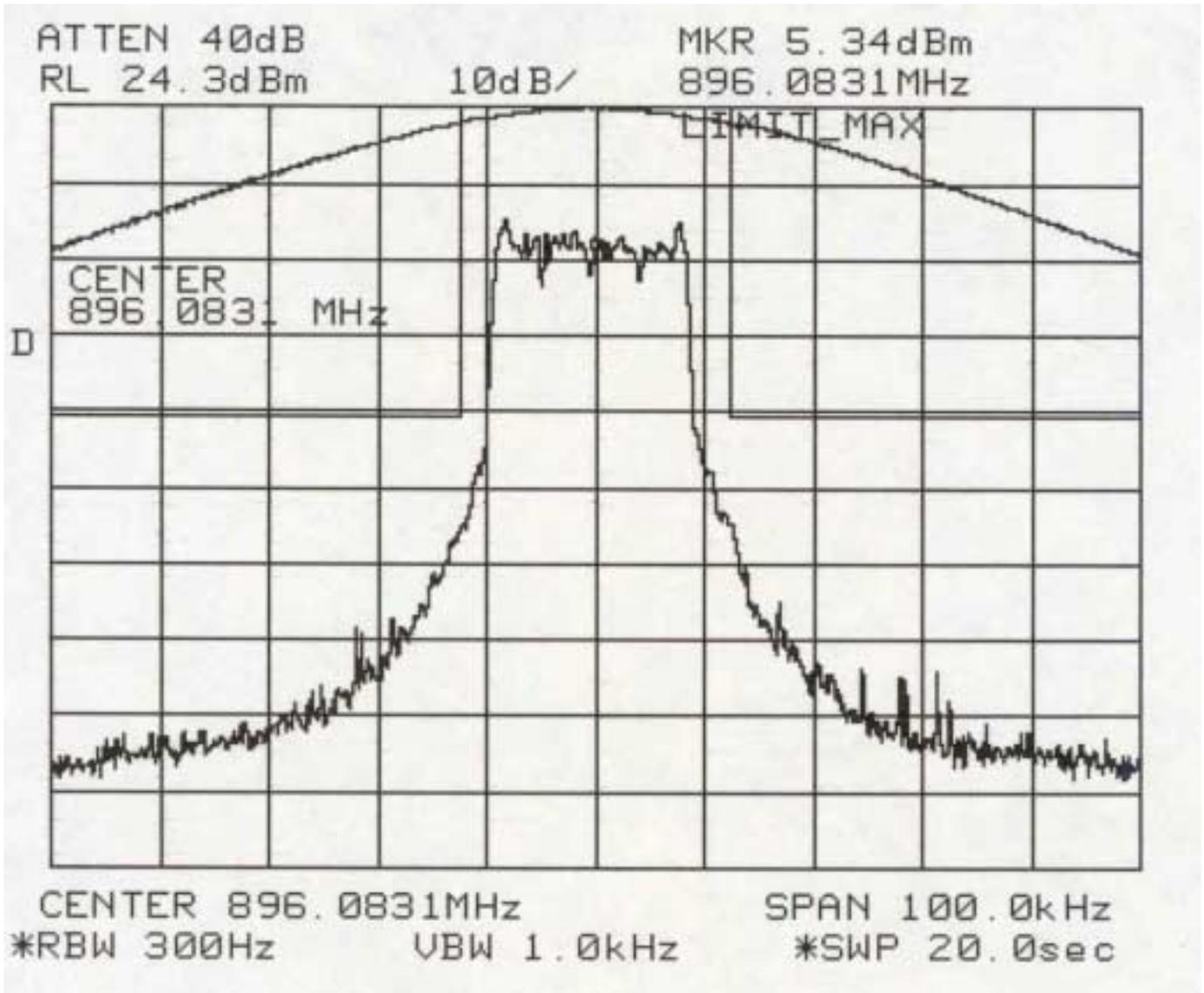


Figure 6-21: Quad-64QAM Modulation performance relative to mask 47 CFR 90.669(a) (MAXIMUM POWER SETTING)

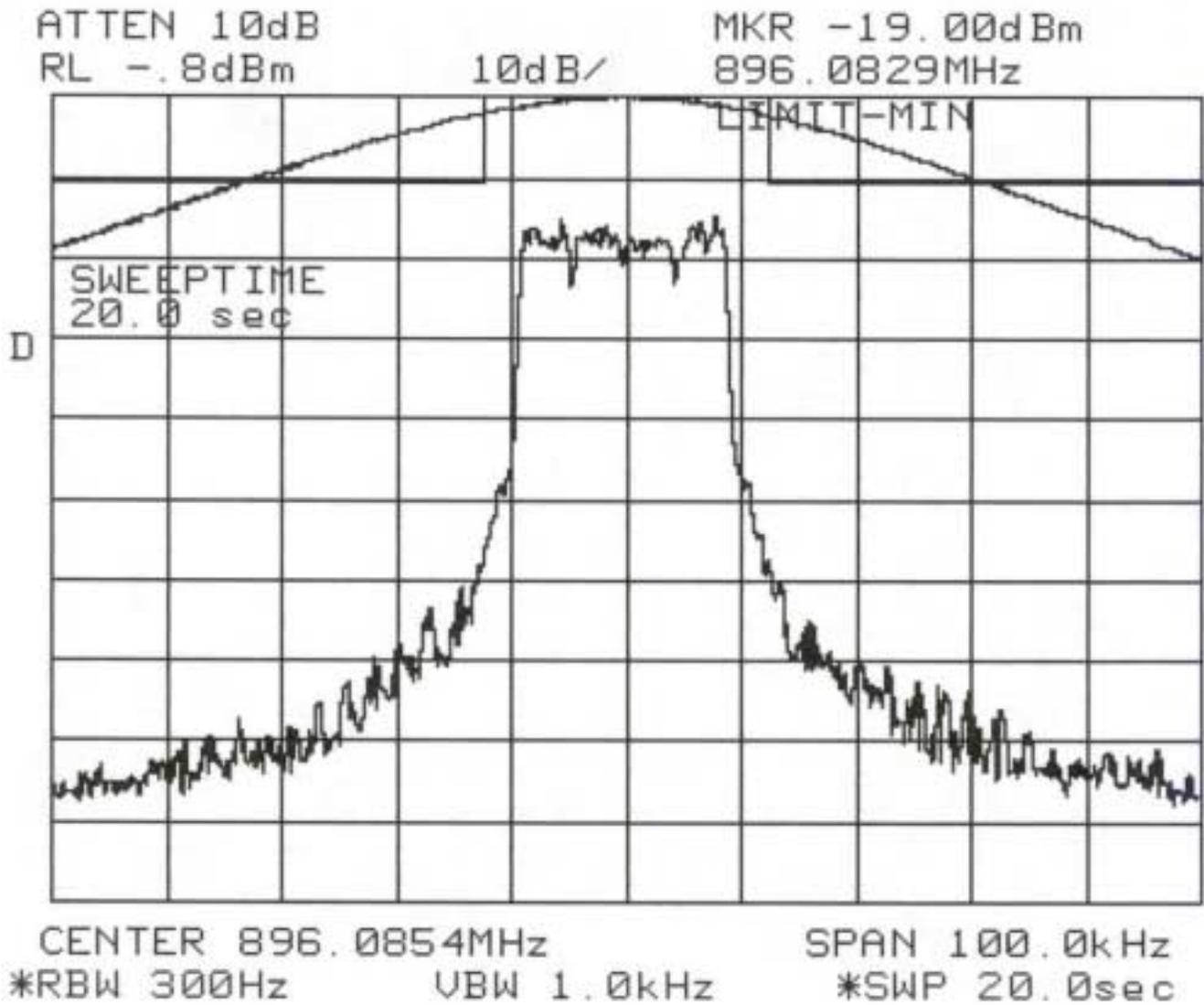


Figure 6-22: Quad-64QAM Modulation performance relative to mask 47 CFR 90.669(a) (MINIMUM POWER SETTING)