EXHIBIT 6b: MEASURED DATA – Pursuant 47 CFR 2.1041

6.4 Land Mobile Band 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 within the modem block function of U801 (see Figure 4-2 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) x (4 kHz) = 4.8 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 x 4.5) = 18.3 kHz.

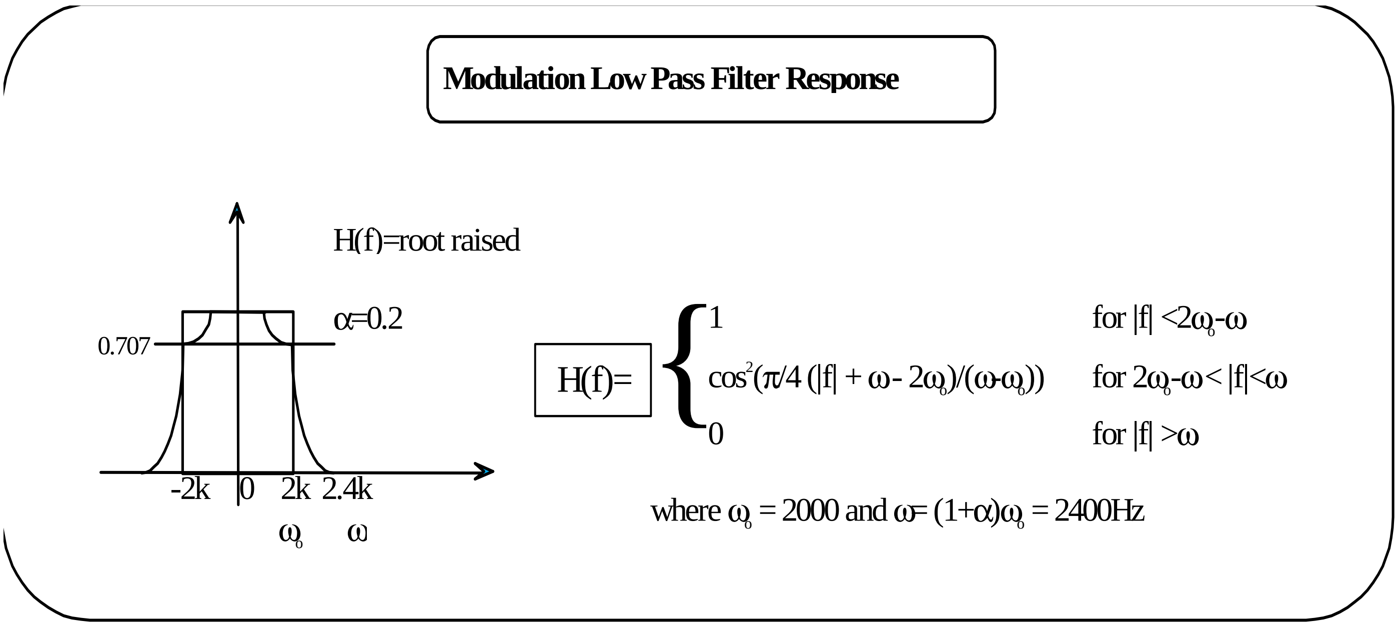

Figure 6-1: Modulation Low Pass Filter Response

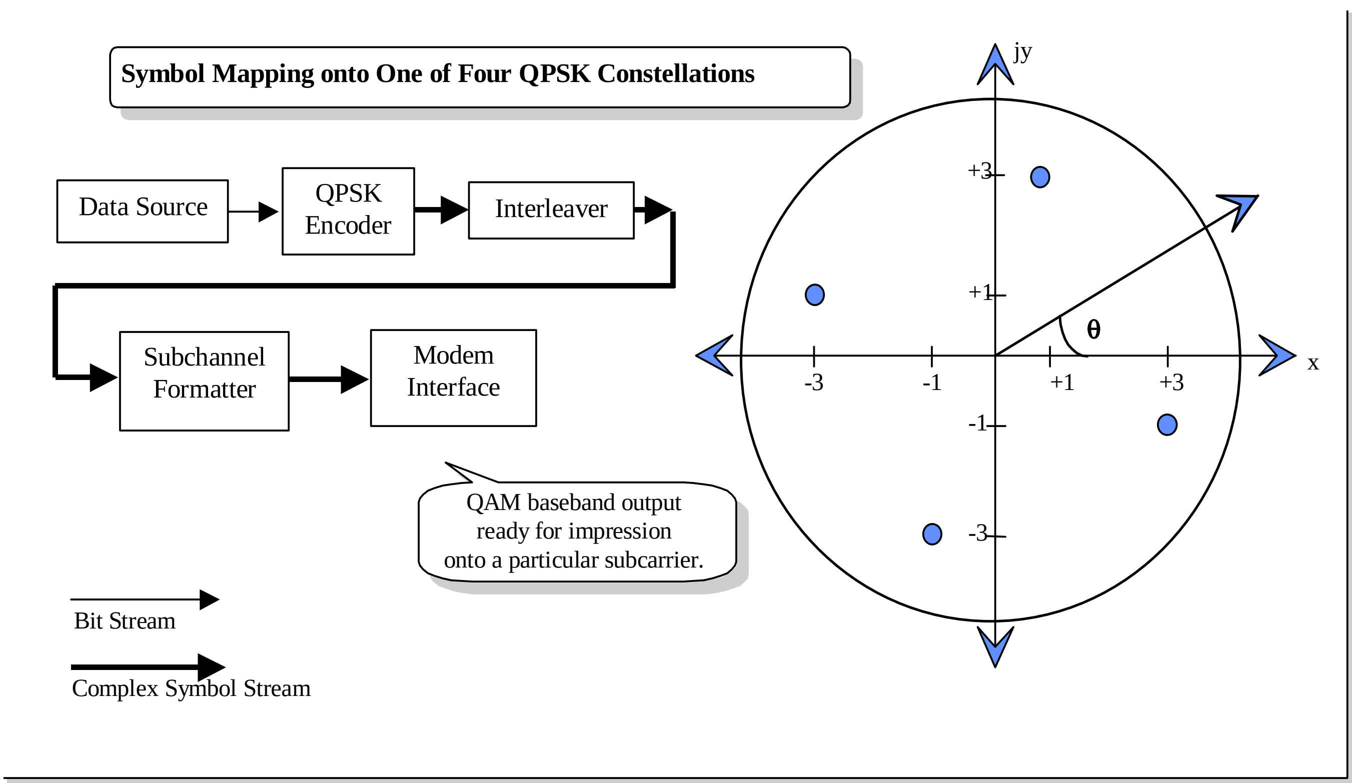

Figure 6-2: Symbol Mapping onto One of Four QPSK Constellations

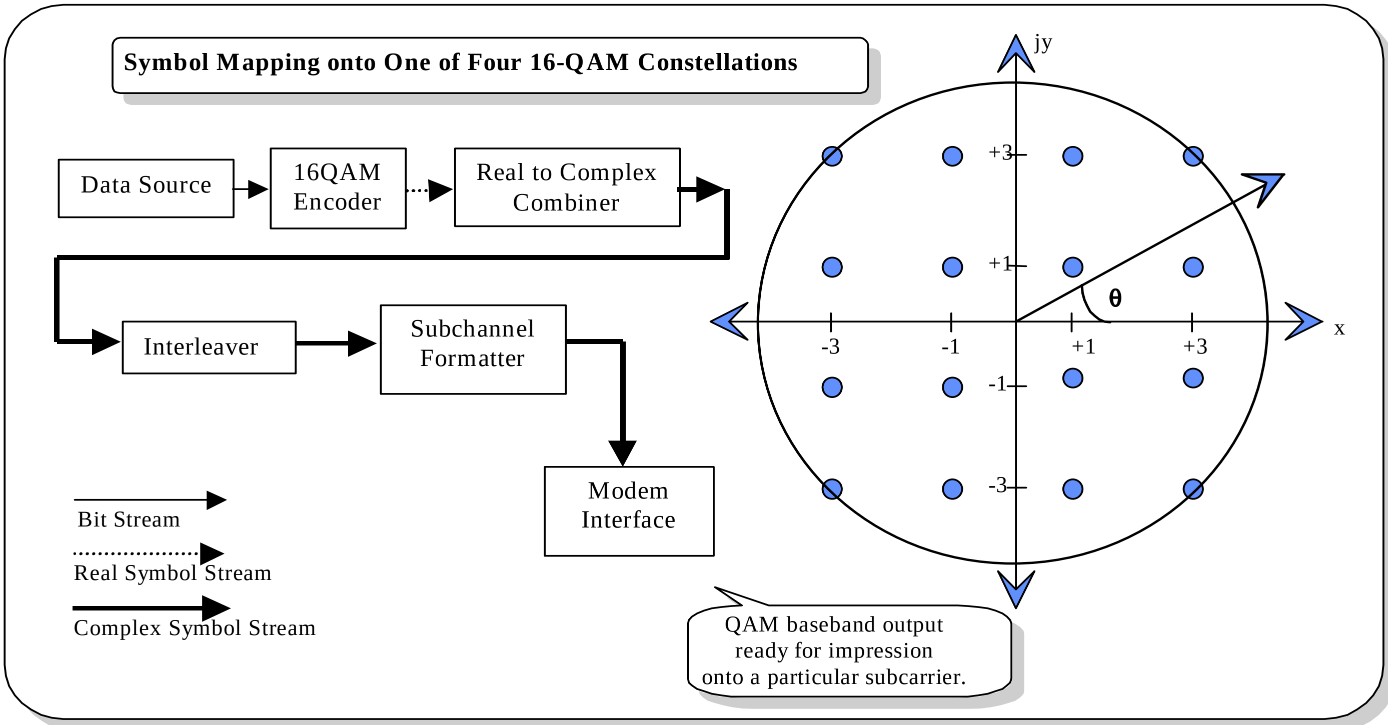

Figure 6-3: Symbol Mapping onto One of Four 16-QAM Constellations

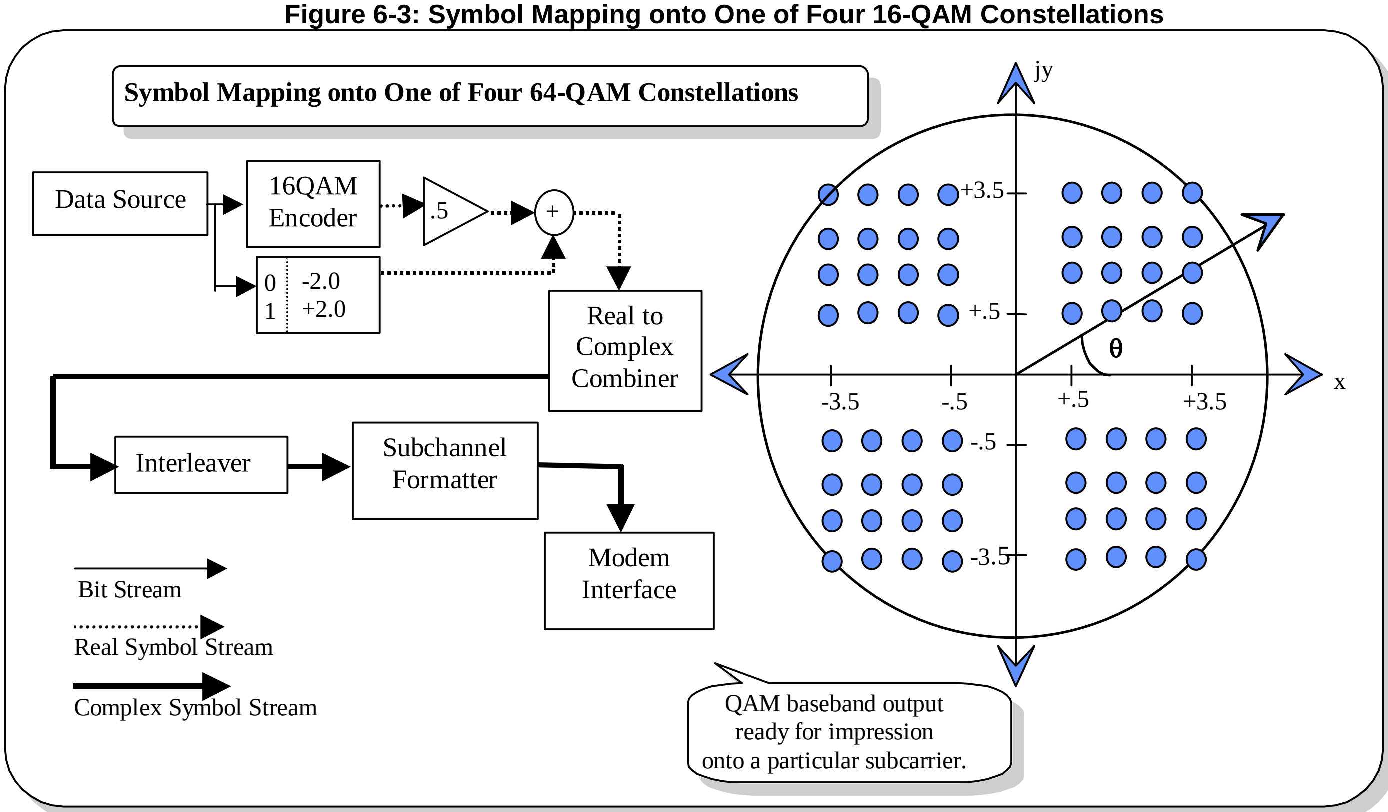

Figure 6-4: Symbol Mapping onto One of Four 64-QAM Constellations

6.4.1 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 6-22, 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.

6.4.2 800 MHz Band Operation Measured Data - 90.210(g), 90.691(a)

NOTE: References to “Split 3:1” are explained in Exhibit 12, Table 12-1.

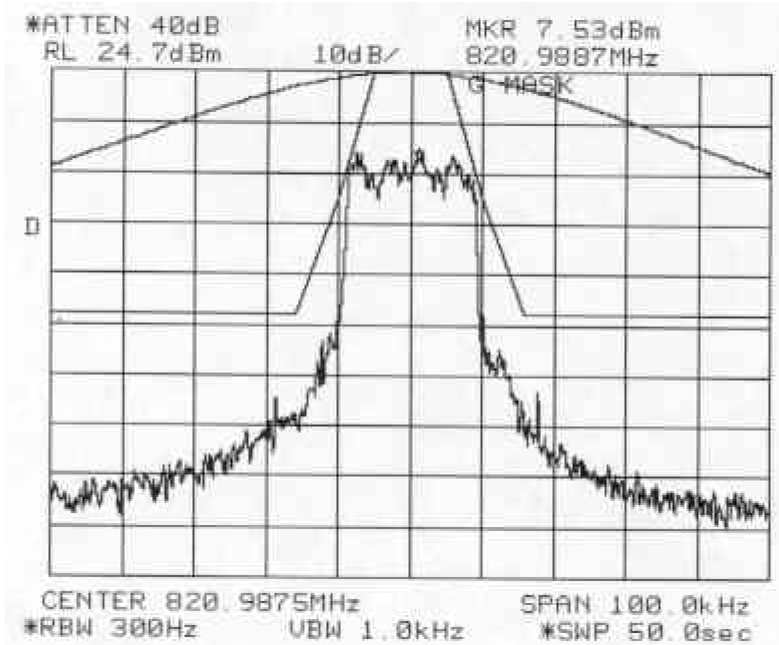

Figure 6-5: Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g) (MAXIMUM POWER SETTING)

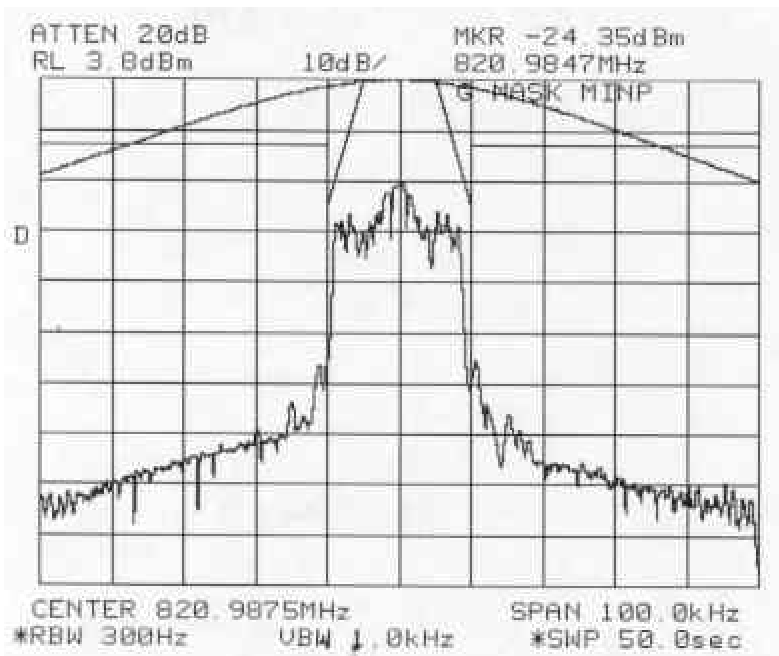

Figure 6-6: Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING)

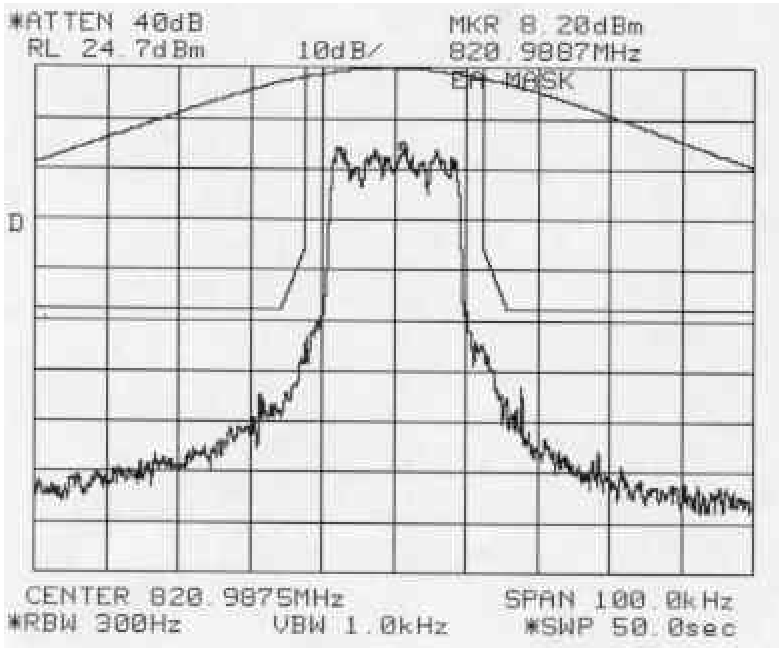

Figure 6-7: Quad-QPSK Modulation performance relative to mask 47 CFR 90.691. (MAXIMUM POWER SETTING)

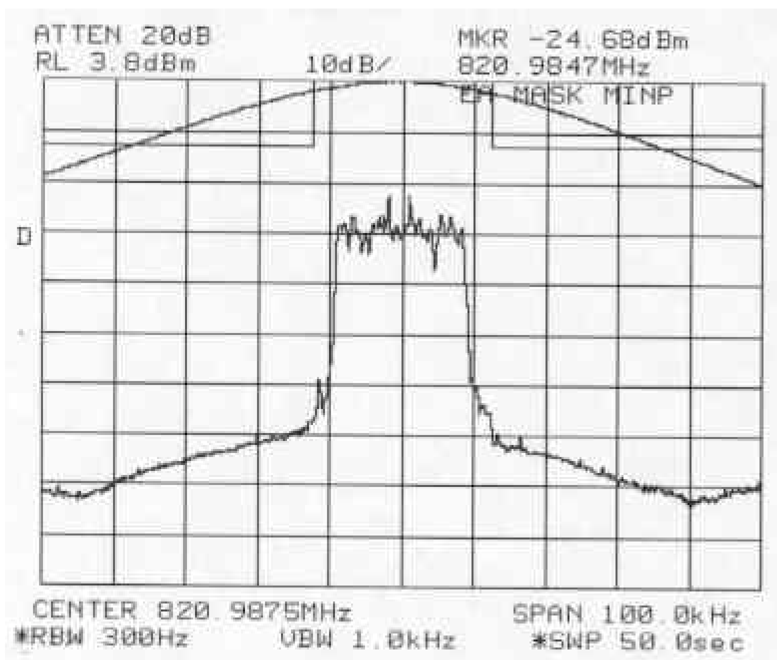

Figure 6-8: Quad-QPSK Modulation performance relative to mask 47 CFR 90.691. (MINIMUM POWER SETTING)

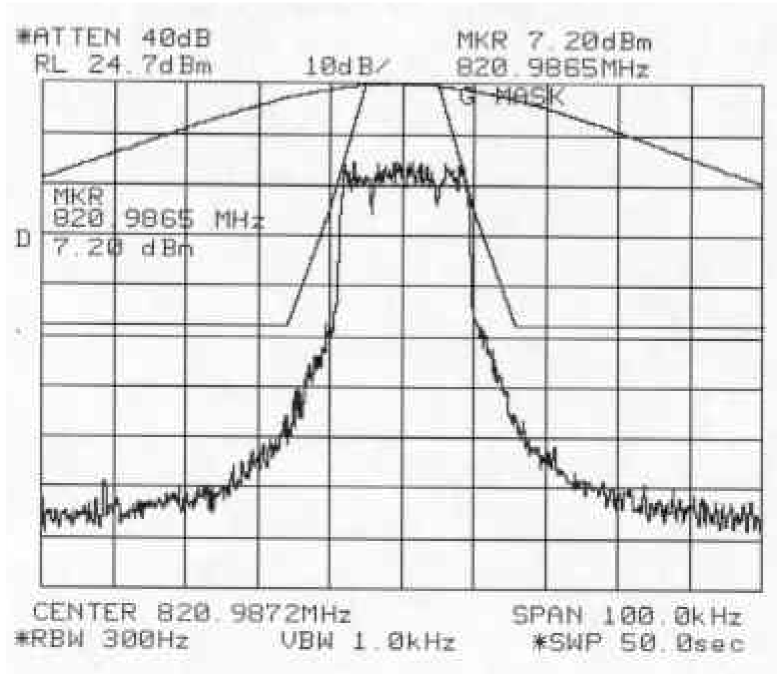

Figure 6-9a: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g)
(MAXIMUM POWER SETTING)

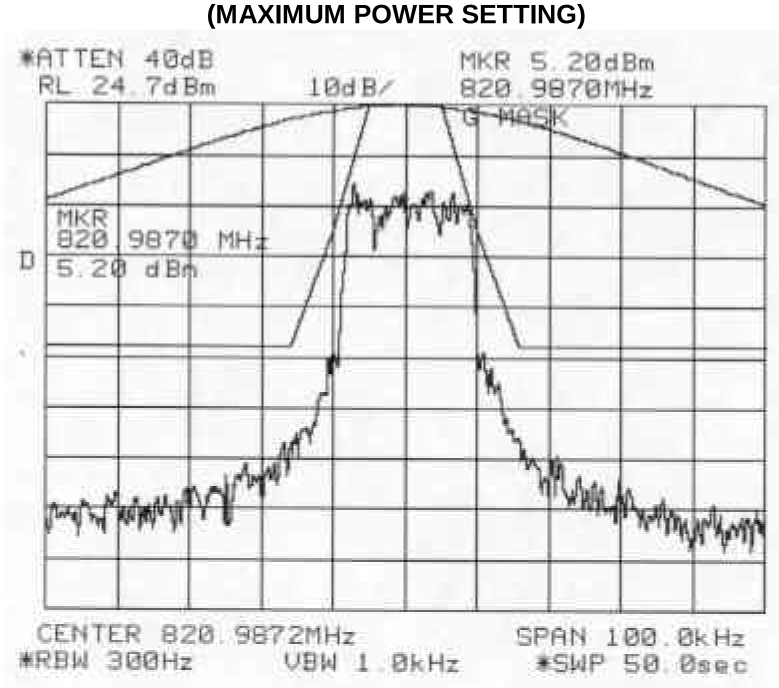

Figure 6-9b: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g)
(MAXIMUM POWER SETTING) (Split 3:1 Interleaving)

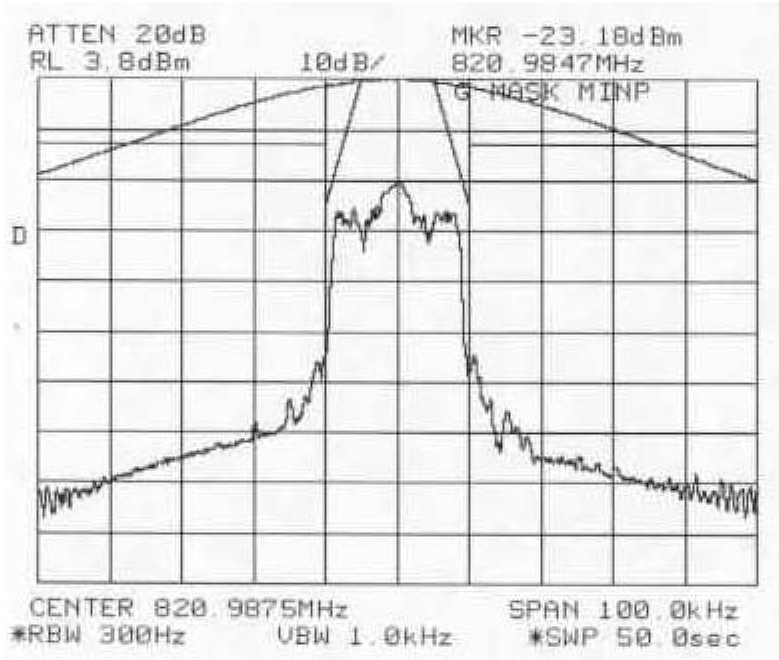

Figure 6-10a: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING)

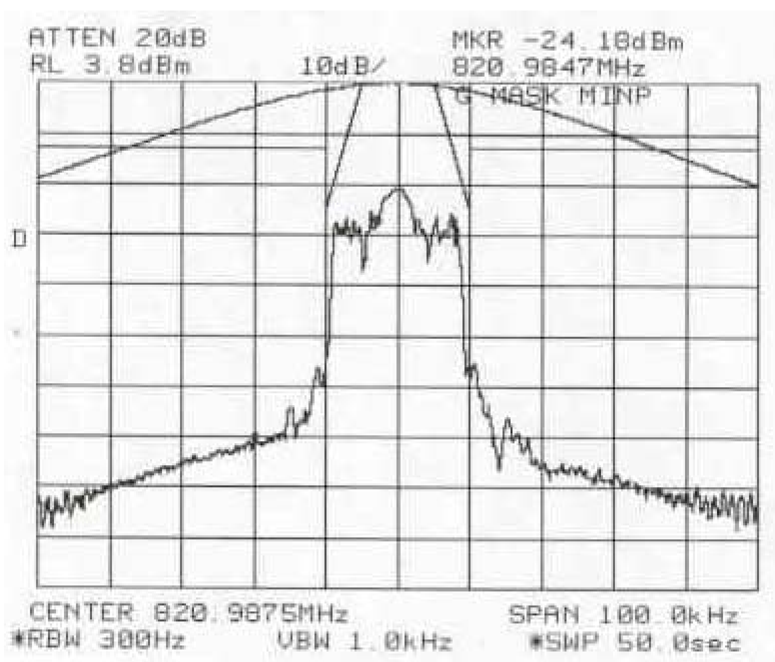

Figure 6-10b: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING) (Split 3:1 Interleaving)

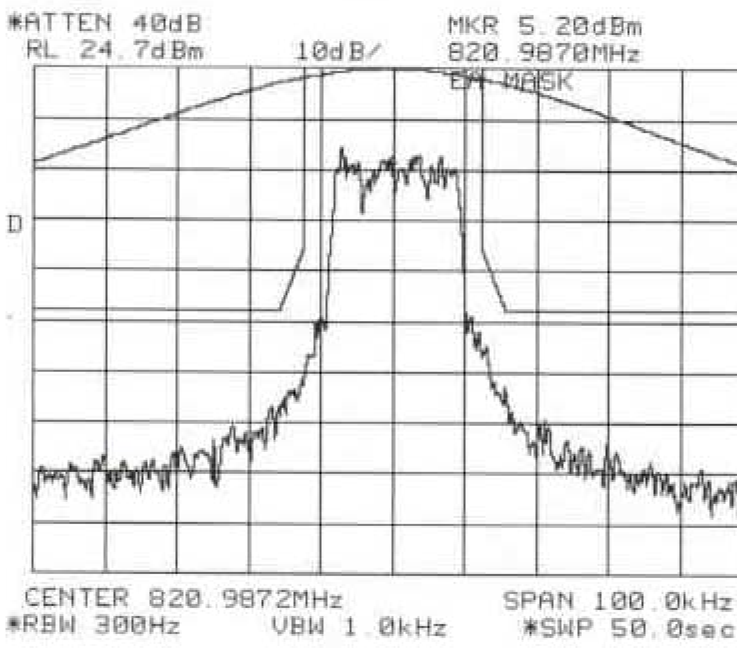

Figure 6-11a: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691. (MAXIMUM POWER SETTING)

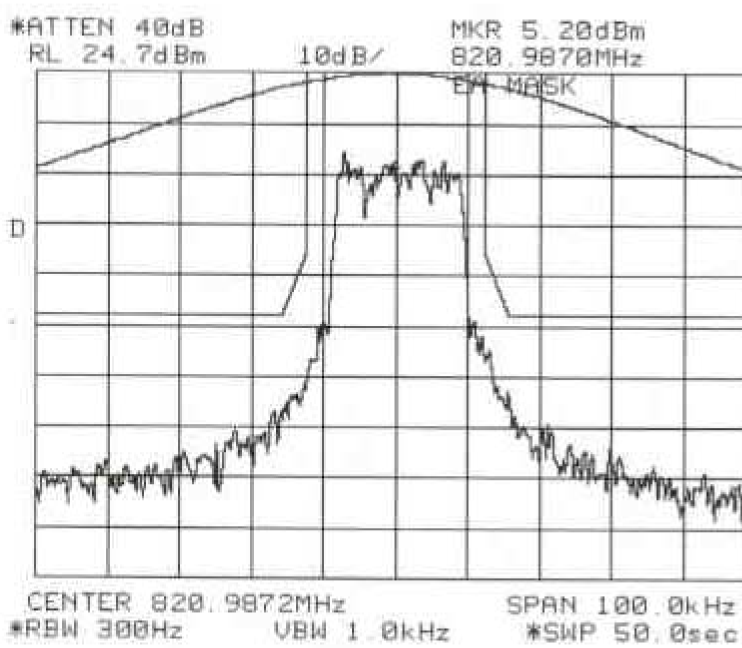

Figure 6-11b: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691. (MAXIMUM POWER SETTING) (Split 3:1 Interleaving)

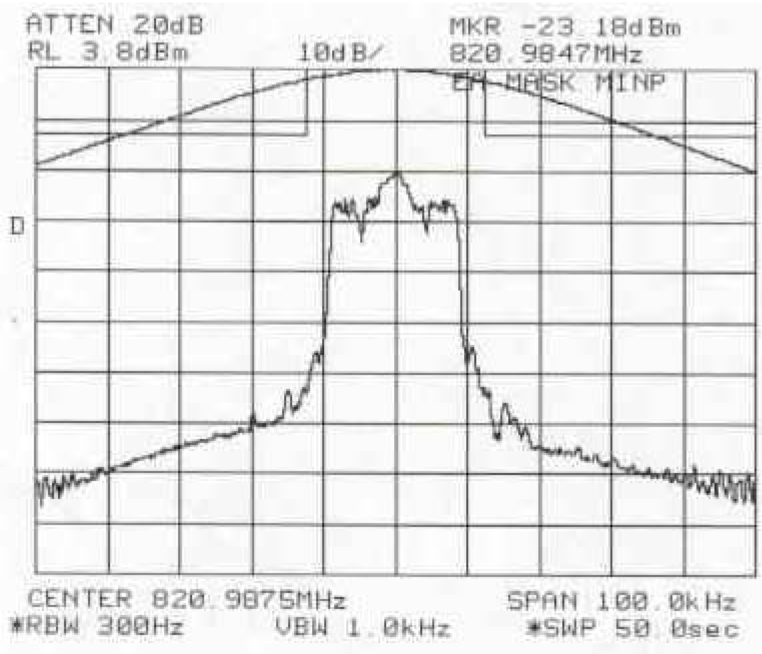

Figure 6-12a: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691.
(MINIMUM POWER SETTING)

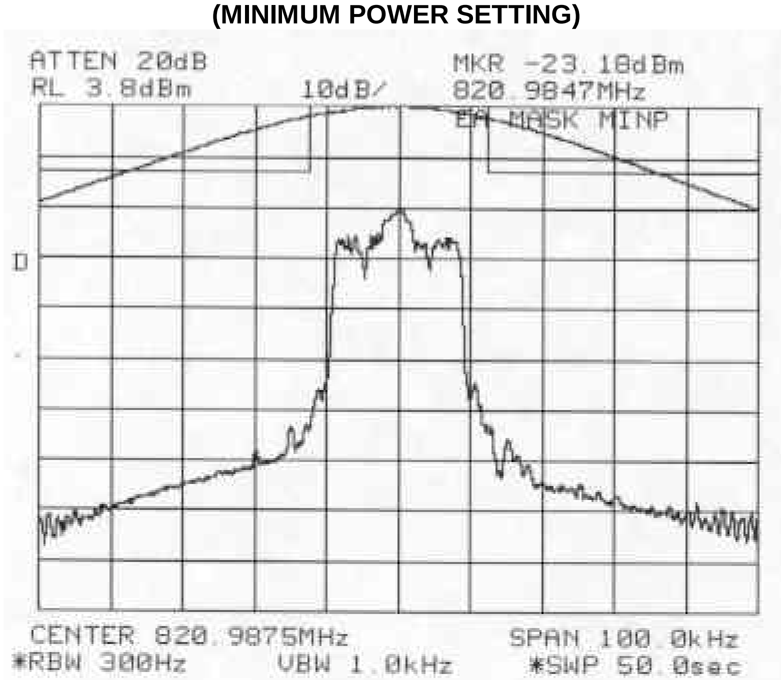

Figure 6-12b: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691.
(MINIMUM POWER SETTING) (Split 3:1 Interleaving)

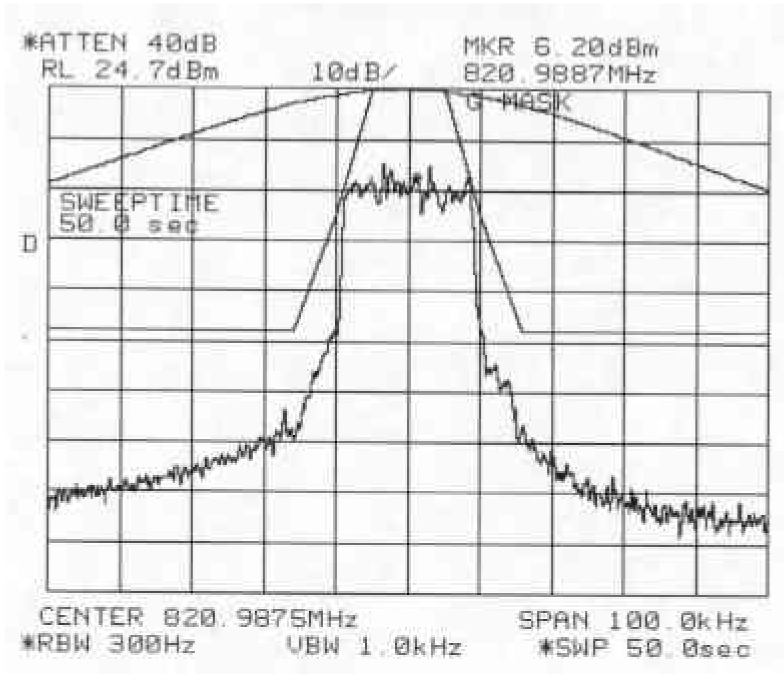

**Figure 6-13: Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g)
(MAXIMUM POWER SETTING)**

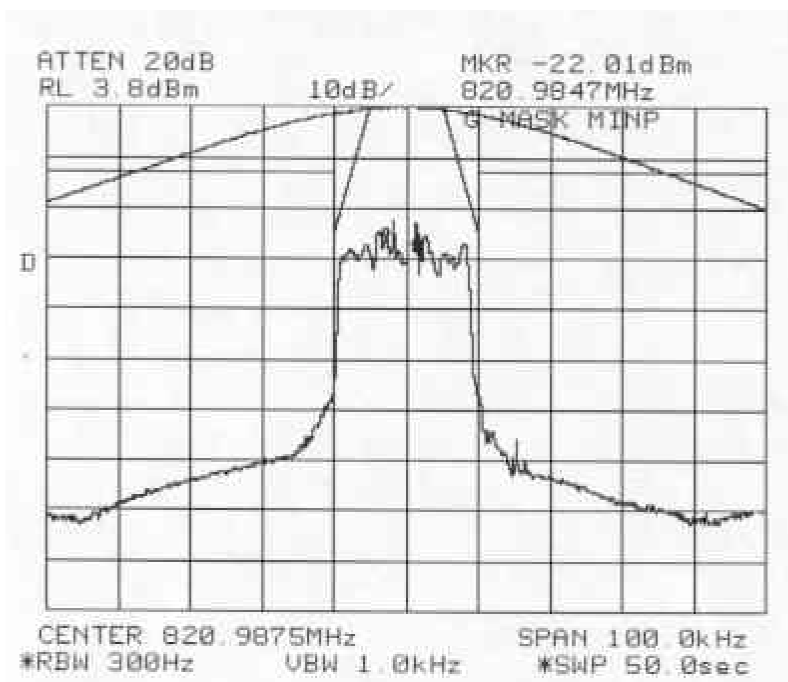

**Figure 6-14: Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g)
(MINIMUM POWER SETTING)**

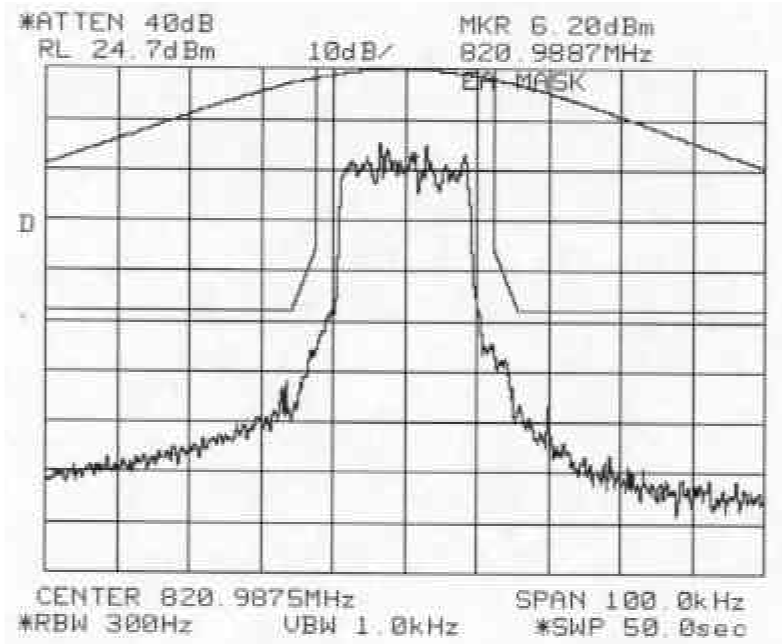

Figure 6-15: Quad-64QAM Modulation performance relative to mask 47 CFR 90.691.
(MAXIMUM POWER SETTING)

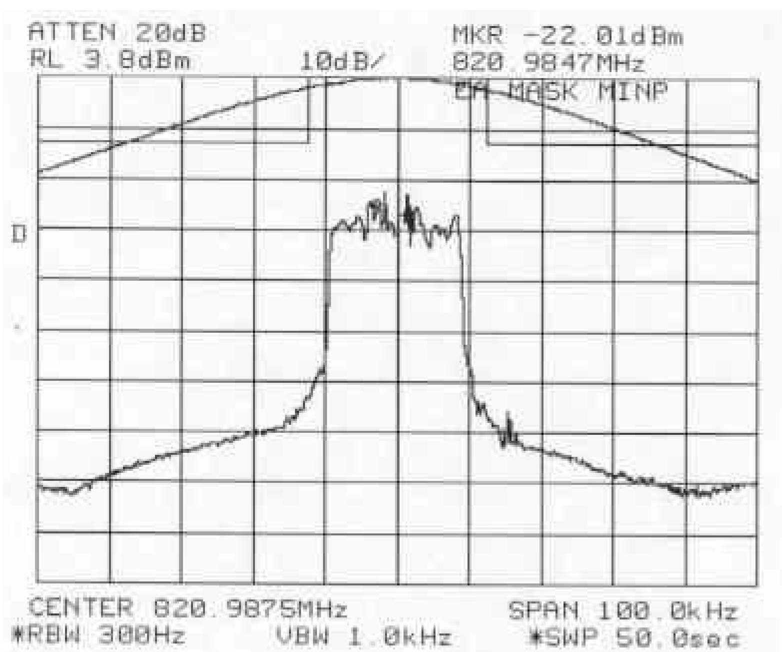

Figure 6-16: Quad-64QAM Modulation performance relative to mask 47 CFR 90.691.
(MINIMUM POWER SETTING)

6.4.3 900 MHz Band Operation Measured Data – 90.669(a)

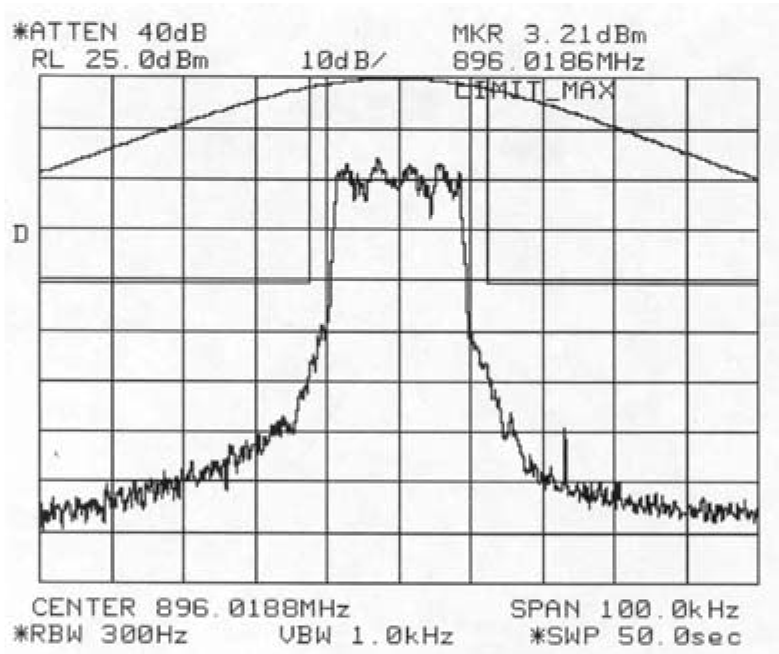

Figure 6-17: Quad-QPSK Modulation performance relative to mask 47 CFR 90.669(a) (MAXIMUM POWER SETTING)

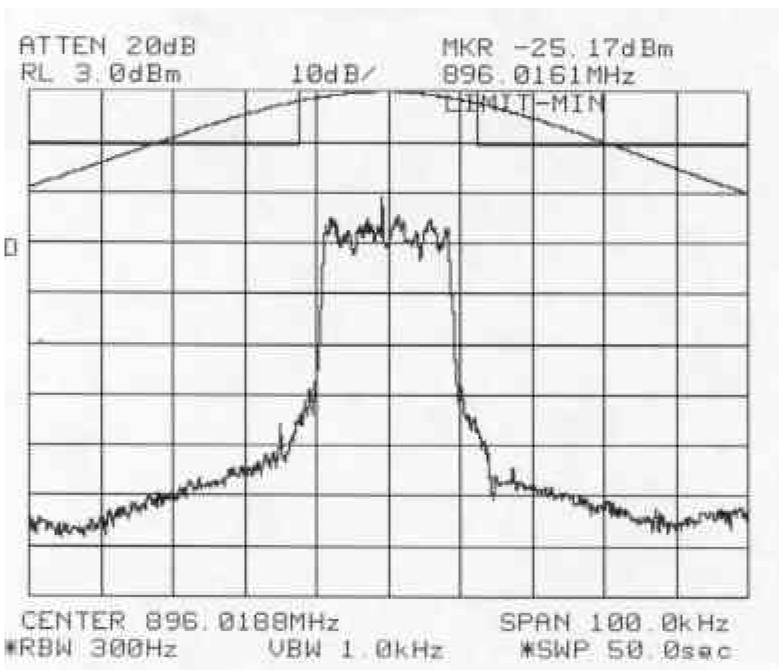

Figure 6-18: Quad-QPSK Modulation performance relative to mask 47 CFR 90.669(a)

(MINIMUM POWER SETTING)

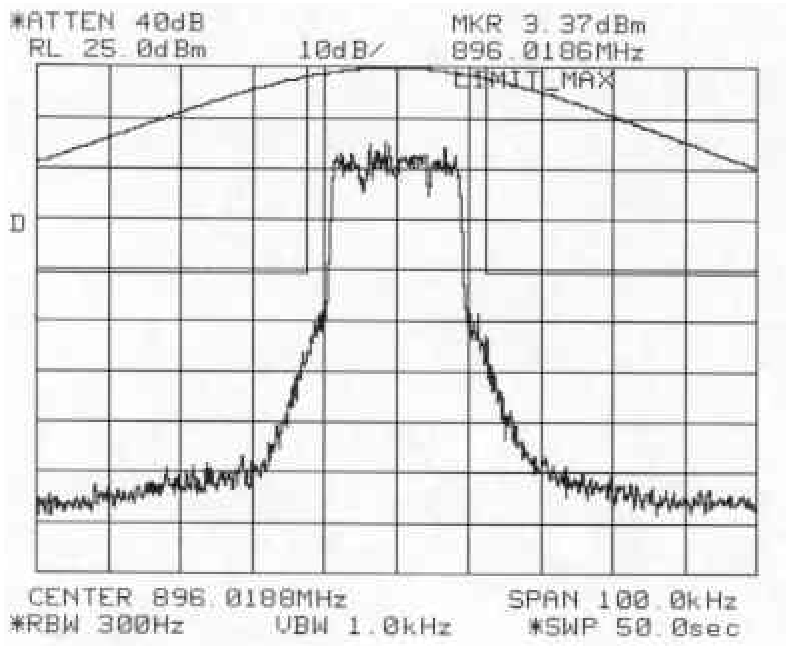

Figure 6-19a: Quad-16QAM Modulation performance relative to mask 47 CFR 90.669(a)
(MAXIMUM POWER SETTING)

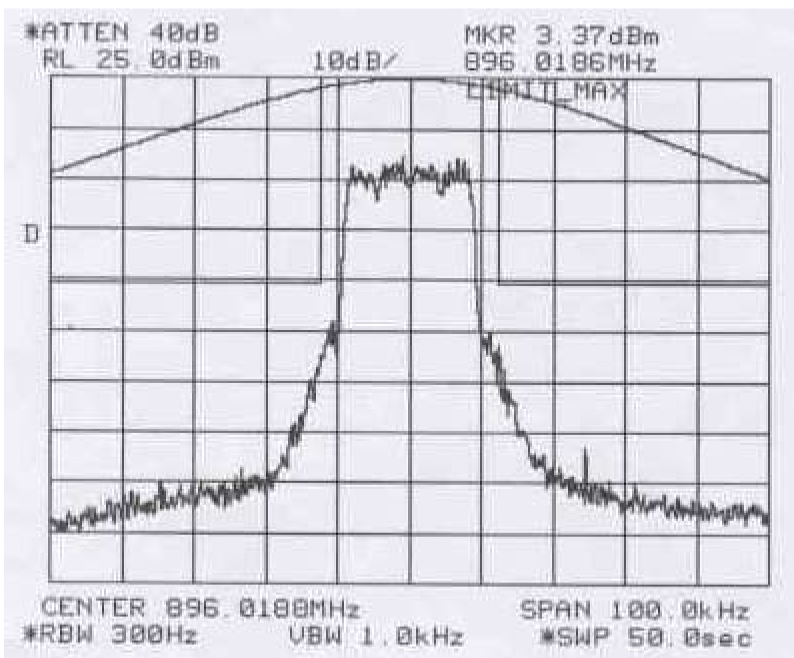

Figure 6-19b: Quad-16QAM Modulation performance relative to mask 47 CFR 90.669(a)
(MAXIMUM POWER SETTING) (Split 3:1 Interleaving)

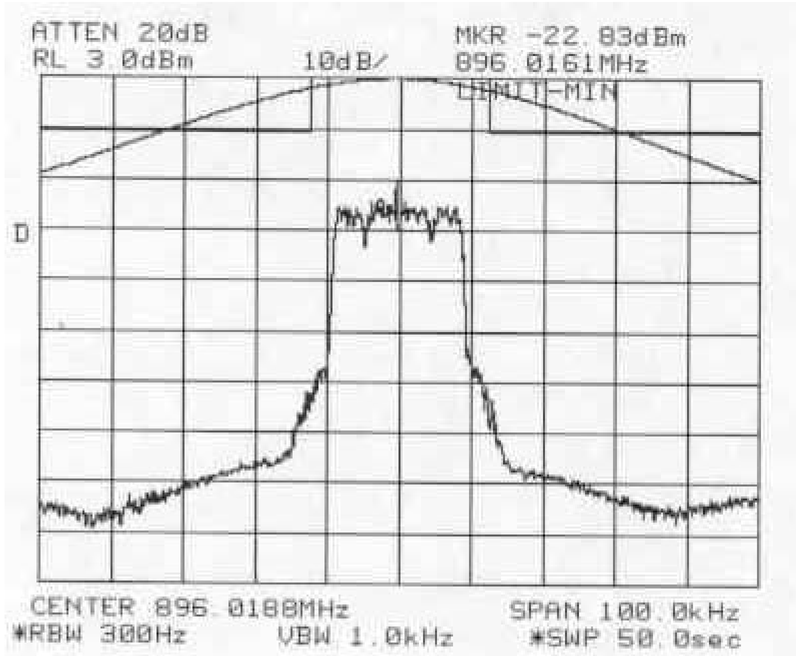

Figure 6-20a: Quad-16QAM Modulation performance relative to mask 47 CFR 90.669(a) (MINIMUM POWER SETTING)

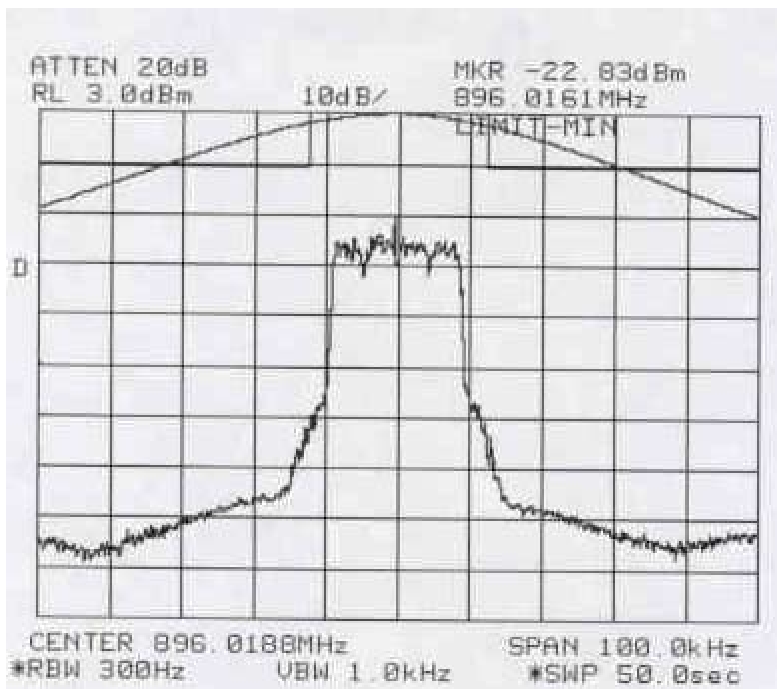

Figure 6-20b: Quad-16QAM Modulation performance relative to mask 47 CFR 90.669(a) (MINIMUM POWER SETTING) (Split 3:1 Interleaving)

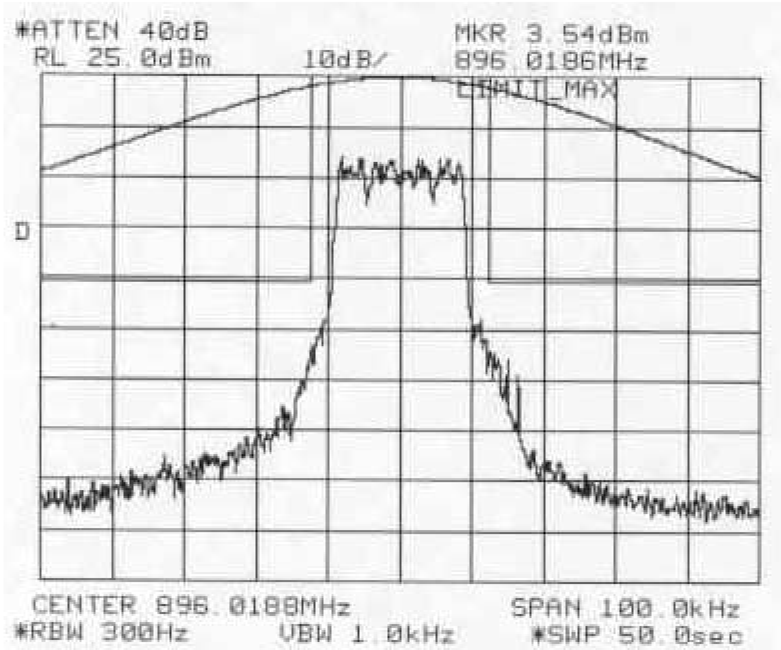

Figure 6-21: Quad-64QAM Modulation performance relative to mask 47 CFR 90.669(a)
(MAXIMUM POWER SETTING)

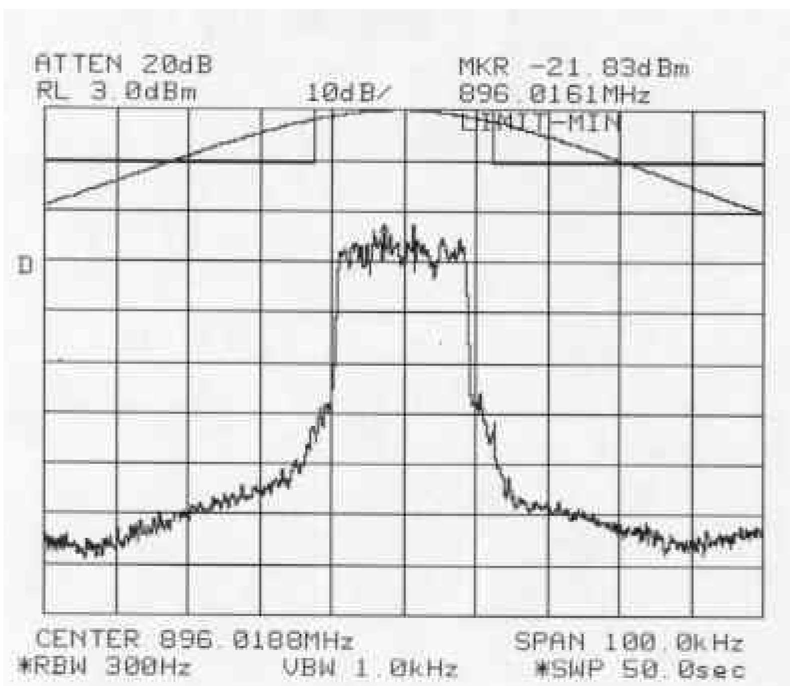

Figure 6-22: Quad-64QAM Modulation performance relative to mask 47 CFR 90.669(a)
(MINIMUM POWER SETTING)

6.5 900 MHz ISM Band Modulation Characteristics and Necessary Bandwidth

In the 900 MHz ISM band, the subject radio makes use of Frequency Shift Keying. The modulation can vary from 2FSK, 4FSK, 6FSK or 8FSK. 2FSK will operate at 800 symbols per second while all others will operate at 3200 symbols per second. The symbol spacing at RF will be a minimum of 3200 Hz resulting in a 99% bandwidth of 25.6 kHz.

The data symbols are up-sampled to a rate Ns times the symbol rate, and pulse shaped by a filter having impulse response p_n. The pulse shape filter is the cascade of a square pulse, of duration equal to one symbol interval, convolved with a Gaussian filter with 3 dB bandwidth equal to 8000 Hz or BT = 2.5. The pulse-shaped signal is integrated using a backward-summation, and then mapped to in-phase (I) and quadrature (Q) channels using the cosine and sine functions, respectively. A scaling factor of π/Ns is required to convert the integrator output to modulated phase. This modulation is shown in Figure X.

The pre-modulation filter has the continuous-time impulse response

$$p(t) = Q\left[\frac{2\pi B}{\sqrt{\ln 2}}\left(t - \frac{T}{2}\right)\right] - Q\left[\frac{2\pi B}{\sqrt{\ln 2}}\left(t + \frac{T}{2}\right)\right]$$

where t is time in seconds, T = 1/3200 is the symbol interval in seconds, B is the 8000 Hz 3-dB bandwidth, and Q(x) is the complimentary distribution function for a Gaussian random variable with zero mean and unit variance, given by

$$Q(x) = \int_x^{\infty} \frac{1}{\sqrt{2\pi}} e^{-x^2/2} dx$$

The discrete-time impulse response is generated by sampling the continuous-time function. In theory, p(t) has infinite time span, but, for all practical purposes, it is time-limited to the interval

$$-3T/4 < t < 3T/4$$

Given this, the discrete-time version is generated as

$$p_n = p\left(t_0 + \frac{nT}{N_s}\right) \qquad n = 0, 1, \ldots, N_p - 1$$

where t_0 is the time of the first sample, N_s is the number of samples per second, and N_p is the filter length.

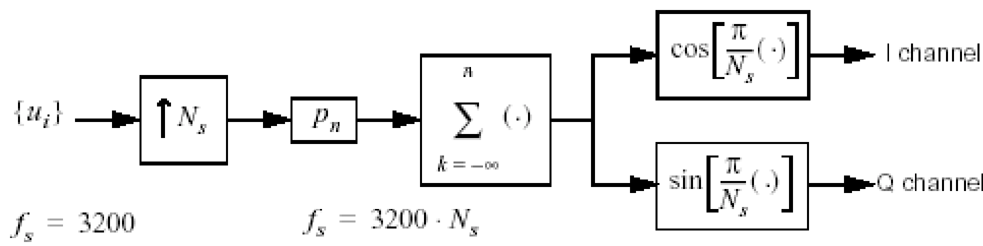

Figure 6-23. FSK Modulator

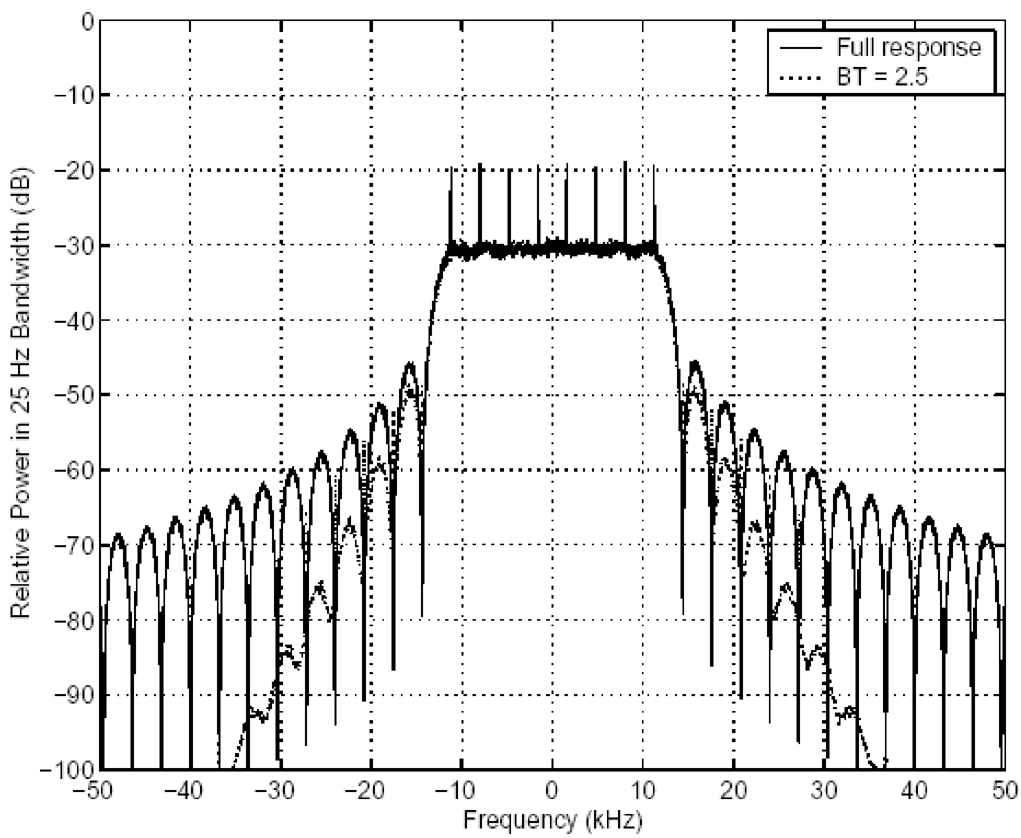

Figure 6-24. Compares the full response of the 8FSK Spectrum vs. the filtered version.

The symbols can have different frequency deviation depending on the particular slot being transmitted. The worst case deviation is 11.2 kHz from the carrier frequency. The following tables represent the possible combinations for a given transmitted slot.

Symbol Value	Symbol Value Deviation (Hz)
-7	-11200
-5	-8000
-3	-4800
-1	-1600
+1	+1600
+3	+4800
+5	+8000
+7	+11200

Table 6-2. Symbols operating at 3200 symbols per second.

Symbol Value	Symbol Value Deviation (Hz)
+2.00, -2.00	+/- 3200
+2.25, -2.25	+/- 3600
+2.50, -2.50	+/- 4000
+2.75, -2.75	+/- 4400
+3.00, -3.00	+/- 4800
+3.25, -3.25	+/- 5200
+3.50, -3.50	+/- 5600
+3.75, -3.75	+/- 6000
+4.00, -4.00	+/- 6400
+4.25, -4.25	+/- 6800
+4.50, -4.50	+/- 7200
+4.75, -4.75	+/- 7600
+5.00, -5.00	+/- 8000

Table 6-3. Symbols operating at 800 symbols per second.

Symbol Value	Symbol Value Deviation (Hz)
-6	-9600
-4	-6400
-2	-3200
+2	+3200
+4	+6400
+6	+9600

Table 6-4. Symbols operating at 3200 symbols per second.

The emission requirements specified for operation in the 902-928 MHz ISM Band include a requirement that there is no emission greater than –20 dBc detectable in a 100 KHz bandwidth at all frequencies outside the ISM band. Table 6-5 shows on the left the emission levels measured in a 100 KHz bandwidth centered 50 KHz removed from the lower ISM band edge. For this measurement the transmitter is tuned to maximum output power at the lowest operating frequency. A similar measurement was made at the upper ISM band edge with the transmitter operating at the maximum ISM band operating frequency.

Lower ISM Band Edge			**Upper ISM Band Edge**		
Band Edge	**F op**	**Power Level**	**F op**	**Band Edge**	**Power Level**
901.95 MHz	902.525 MHz	Delta (dB)	927.475 MHz	928.05 MHz	Delta (dB)
19.36 dBm	-44.05 dBm	63.41	19.32 dBm	-48.22 dBm	67.5

Table 6-5. 900 MHz ISM Necessary Bandwidth

Note: Power levels shown are not absolute power levels of the device under test. There was a 10 dB RF attenuator and associated cabling between the device and the measuring spectrum analyzer. Test procedure is included in section 7.4.