

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 as described in Exhibit 12.

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

Maximum output power rating: 640 milliwatts (28.06 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)

Maximum tuned output power will vary over a range of 640 (maximum pulse average power) to a minimum of 0.081 milliwatts (pulse average power), 39 dB below maximum tuned output power.

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

In order to prevent the malfunctions that can occur due to directly measuring the DC characteristics of the final RF amplifying stage, data was obtained by measuring the entire radio DC current and is reported herein for the entire radio. The DC current and the RF output power was measured with a special RF/DC test fixture set to supply the radio with the nominal battery voltage of 4.0 V. The characteristics were measured during a transmission pulse and are listed in the Table 6-1.

6.2 ISM Band Transmitter Output Power -- Pursuant 47 CFR 2.1033(b)6) and 15.247(b)2)

The ISM transmitter operating in the 902-928 MHz band is a frequency hopped, fixed output power type. Output power (as defined in 47 CFR 15.247) is controlled as described in Exhibit 12.

Maximum peak output power rating: 1000 milliwatts (30 dBm), peak power. The modulation scheme employed can cause peak fluctuations in output power of up to .5 dB from maximum pulse average power, which is 891 mW (29.5 dBm).

Output power is intentionally not adjusted in operation in the ISM frequency range. Nominal output power is 743 mW (28.71 dBm), pulse average power. This level established to maintain compliance with maximum output power rating. It includes consideration of variation of peak to average power fluctuations in the output RF power, variation in output power due to changes in voltage and operating temperature, and manufacturing tolerances in establishing nominal output power.

Characteristics	Land Mobile		ISM
	800 MHz		902-928 MHz
Power Setting	maximum	minimum	maximum
DC Voltage (Volts)	4	4	4
DC Current (A)	1.18	0.597	1.33
Output Power (mW)	590	0.072	743

Table 6-1 Characteristics for 800 and 900 MHz bands

6.3 Land Mobile 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 $(1 + 0.2) \times (4 \text{ kHz}) = 4.8 \text{ kHz}$. Since the sub-channels are spaced 4.5 kHz apart, the necessary bandwidth of the composite 4 sub-channel symbol streams is $4.8 + (3 \times 4.5) = 18.3 \text{ kHz}$.

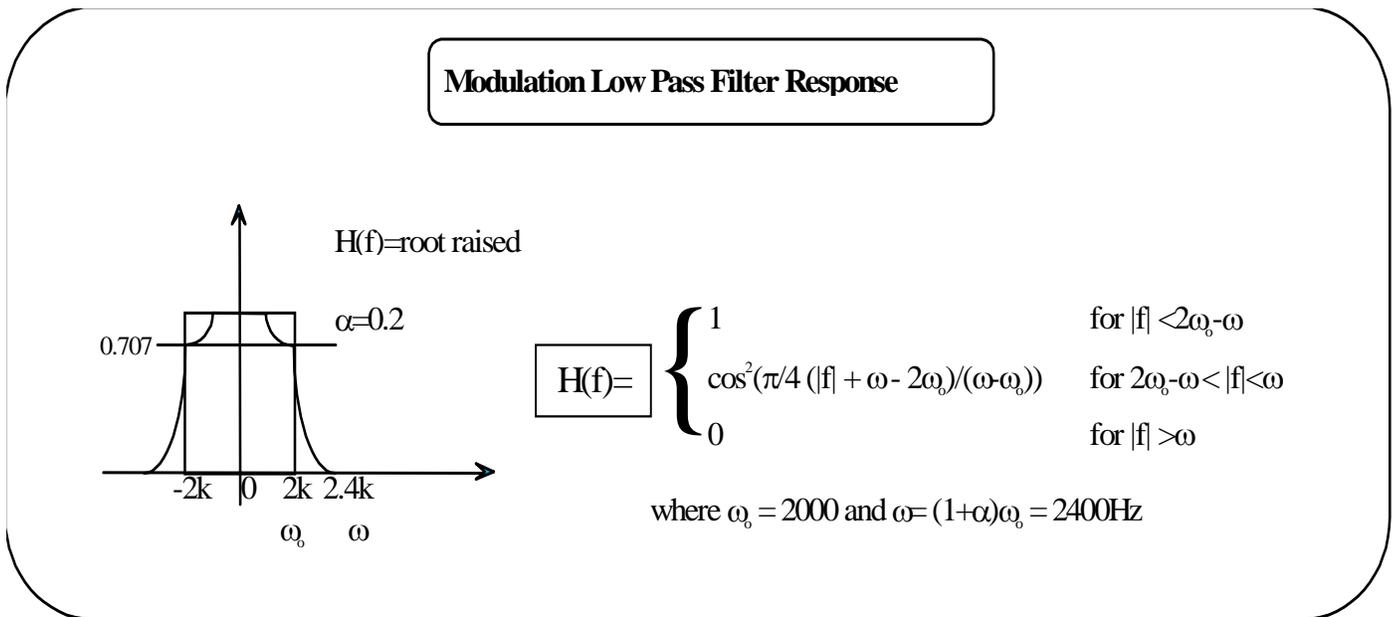


Figure 6-1: Modulation Low Pass Filter Response

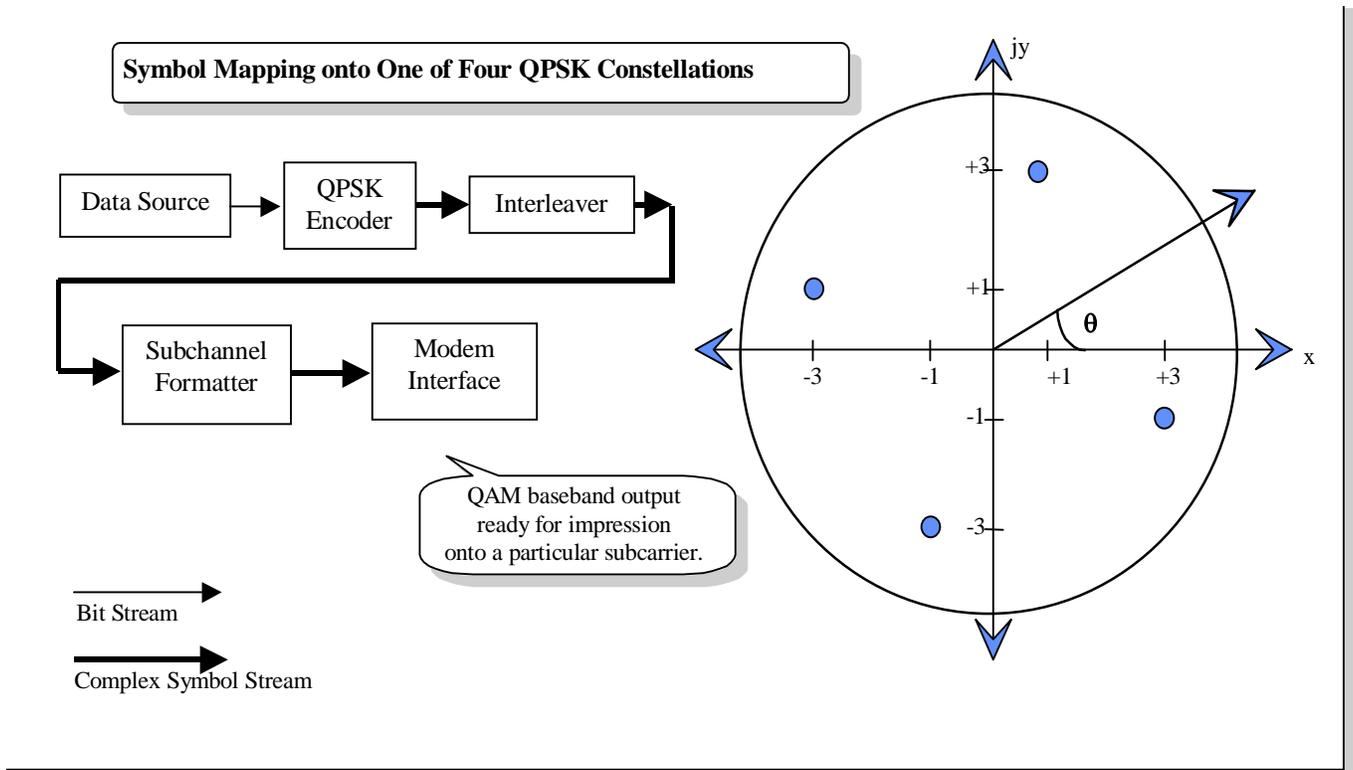


Figure 6-2: Symbol Mapping onto One of Four QPSK Constellations

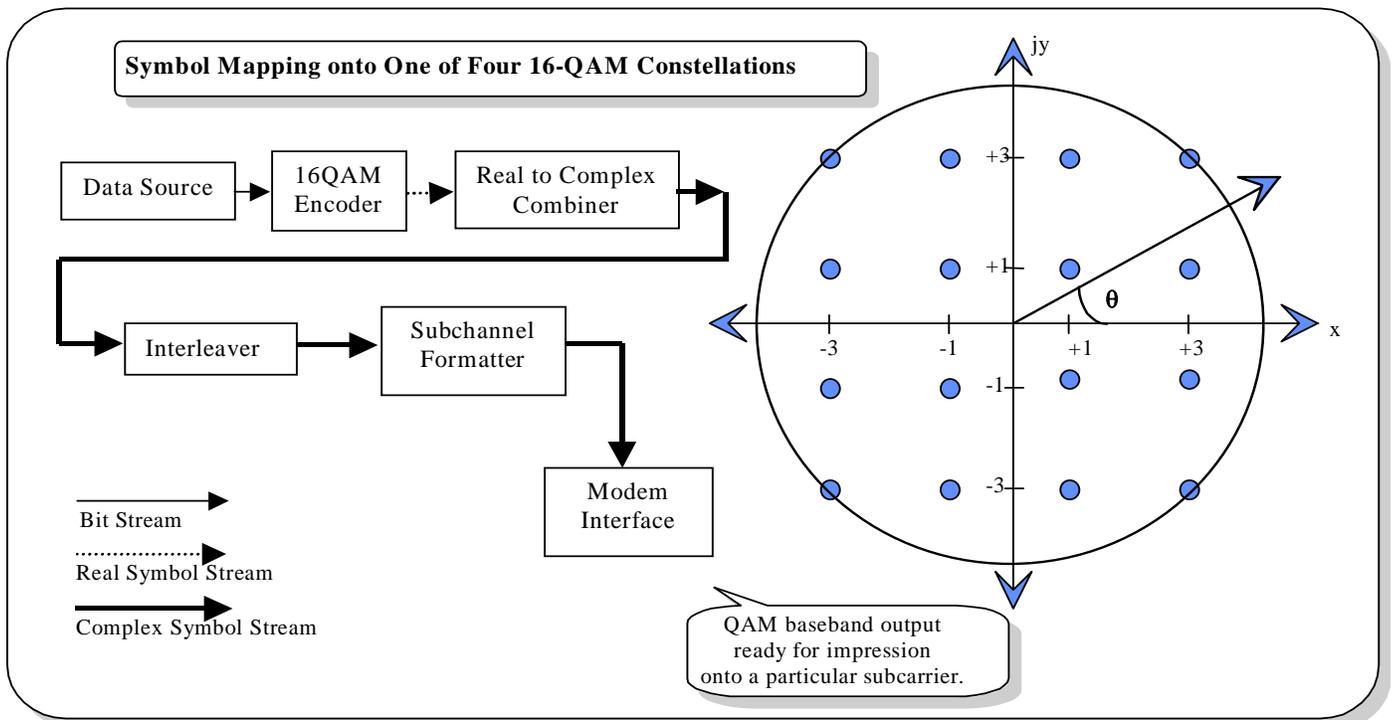


Figure 6-3: Symbol Mapping onto One of Four 16-QAM Constellations

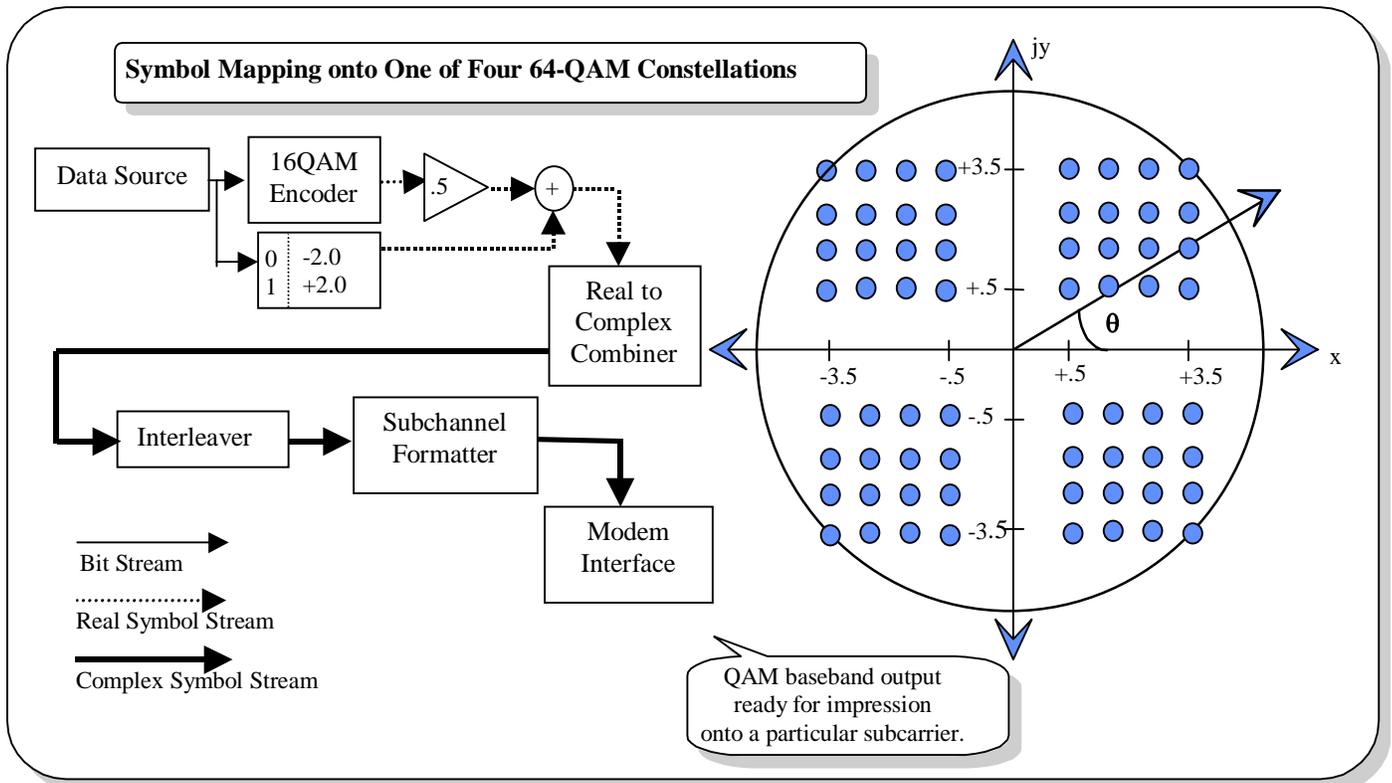


Figure 6-4: Symbol Mapping onto One of Four 64-QAM Constellations

6.4 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.

6.4.1 800 MHz Band Operation Measured Data

FCC Limits

- Per 47CFR90.210(g)
- Per EA SMR Emission Mask, 47CFR90.691(a)

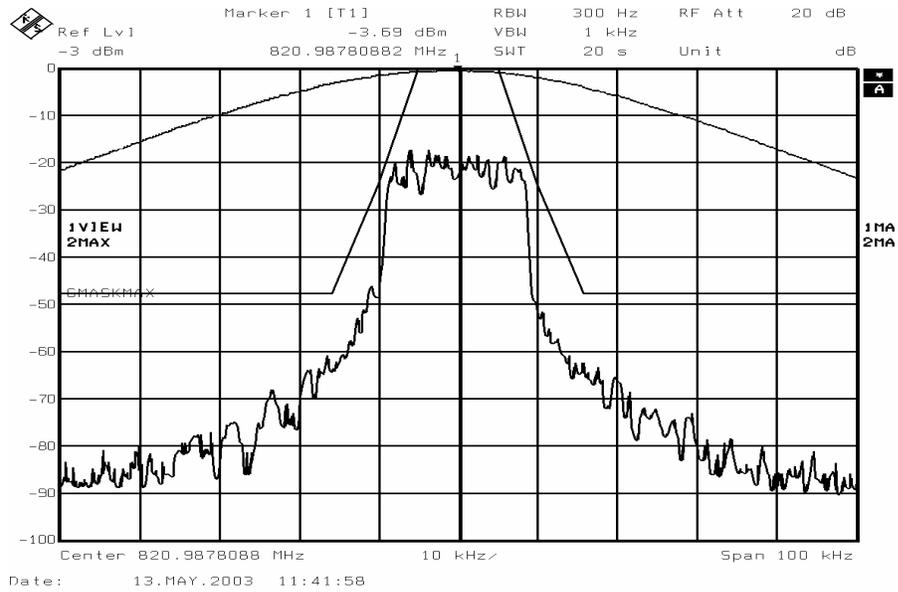


Figure 6-5: Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g) (MAXIMUM POWER SETTING)

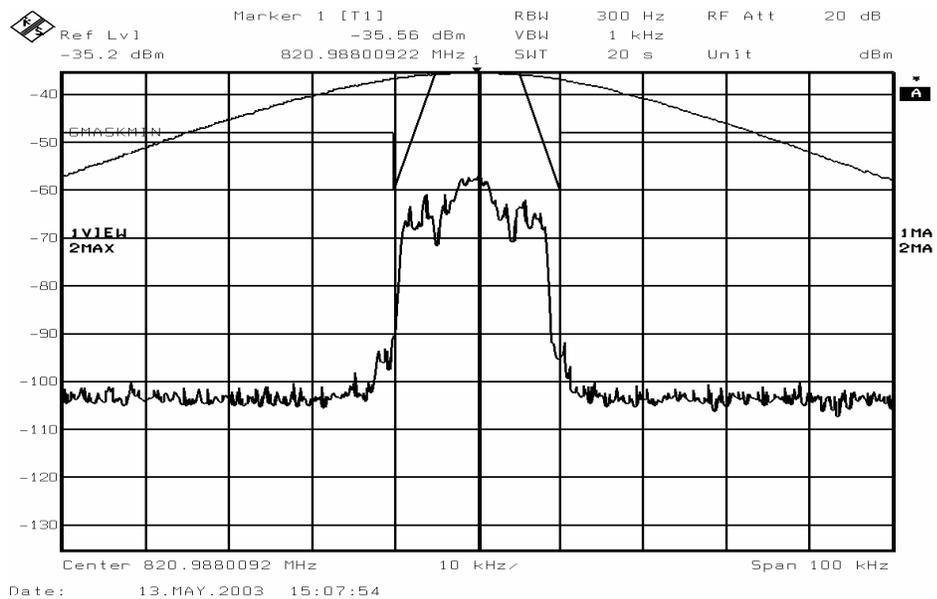


Figure 6-6: Quad-QPSK Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING)

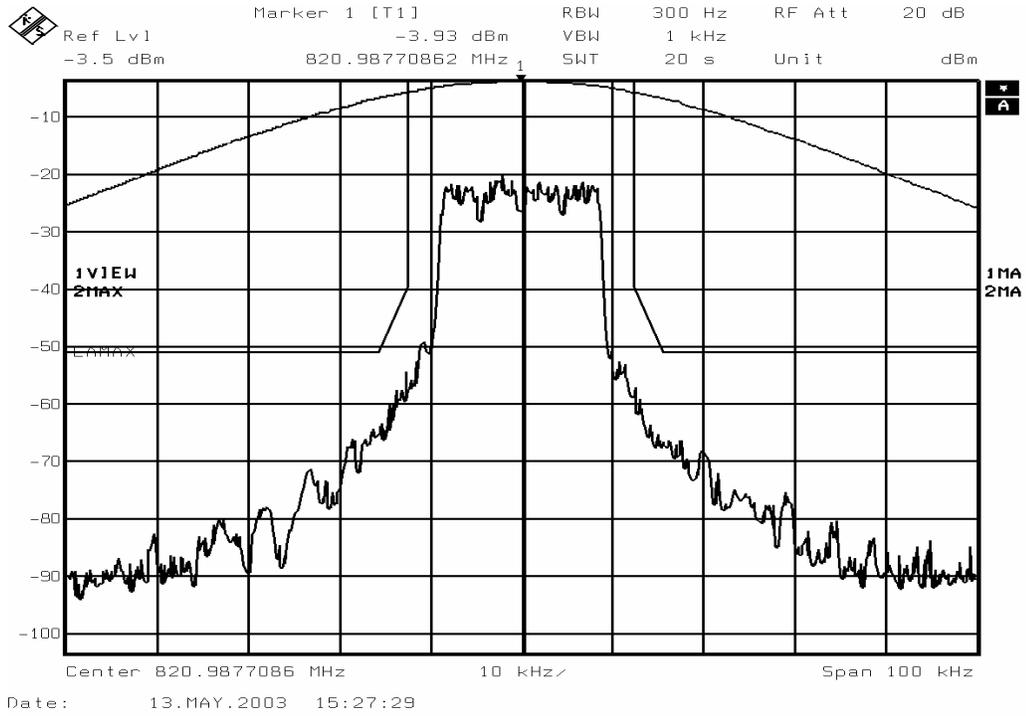


Figure 6-7: Quad-QPSK Modulation performance relative to mask 47 CFR 90.691. (MAXIMUM POWER SETTING)

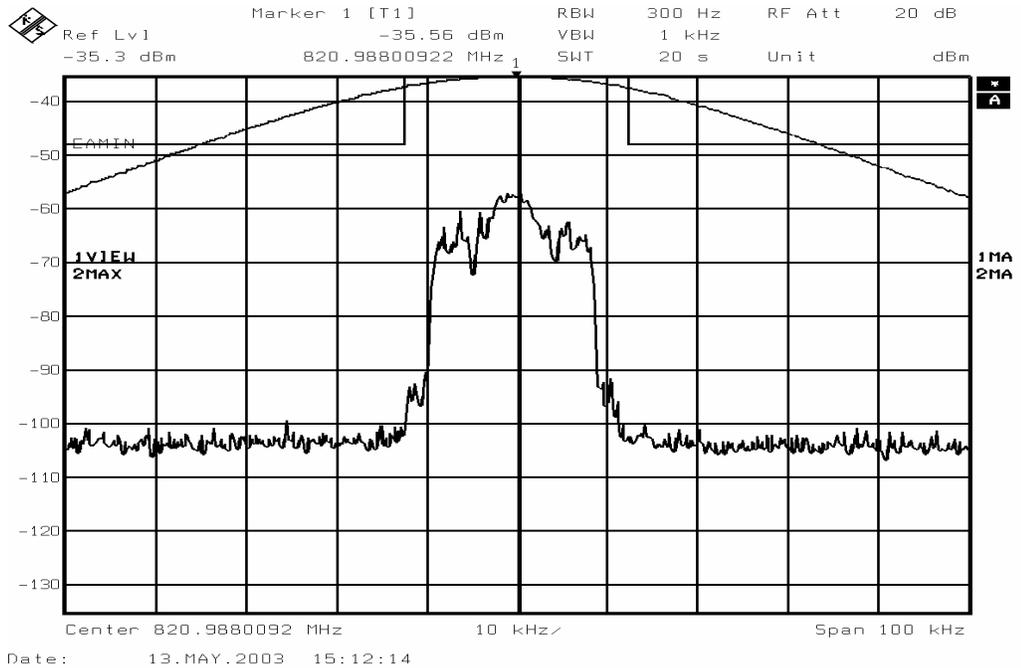


Figure 6-8: Quad-QPSK Modulation performance relative to mask 47 CFR 90.691. (MINIMUM POWER SETTING)

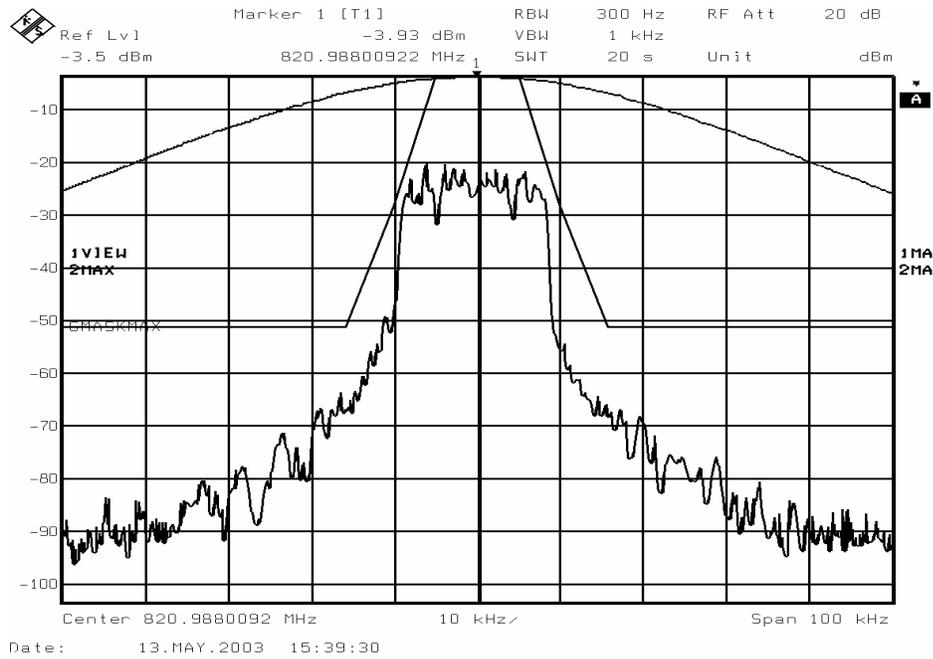


Figure 6-9: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g) (MAXIMUM POWER SETTING)

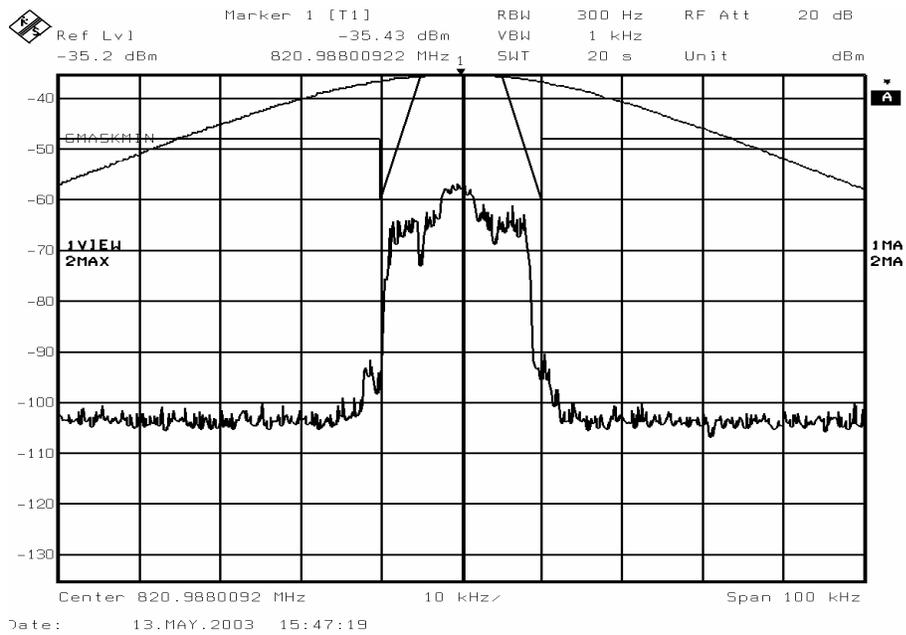


Figure 6-10: Quad-16QAM Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING)

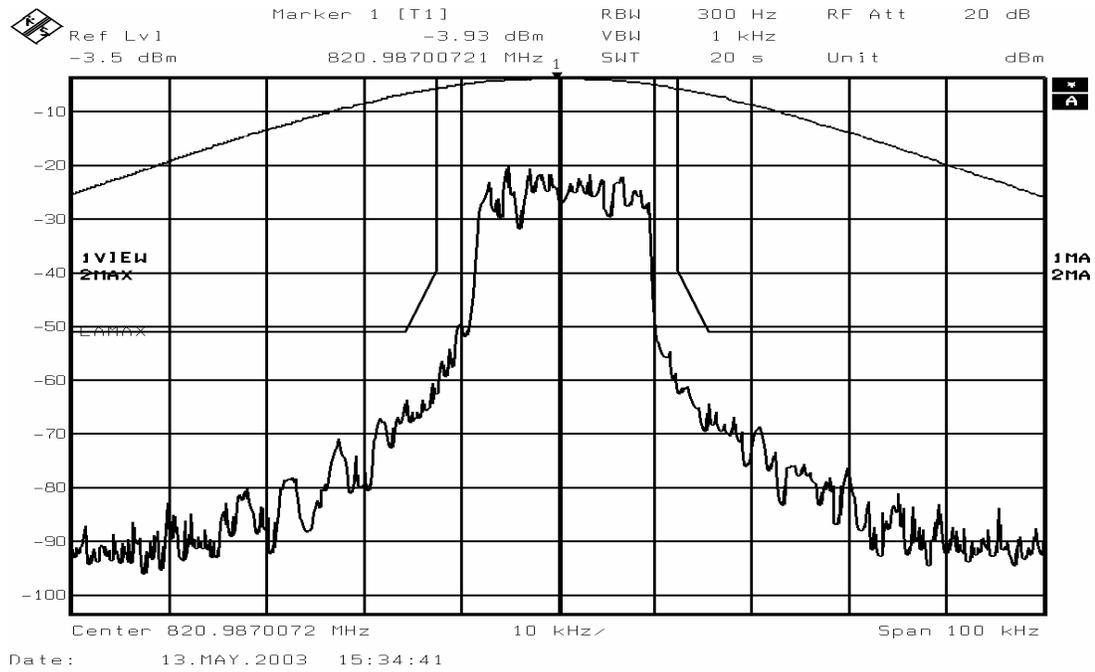


Figure 6-11: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691. (MAXIMUM POWER SETTING)

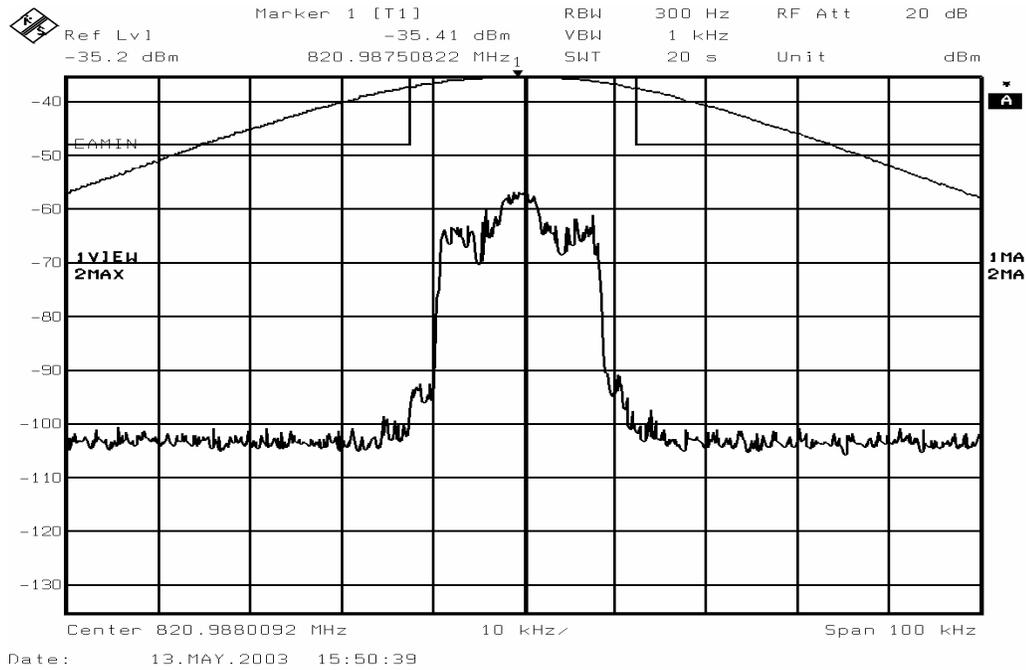


Figure 6-12: Quad-16QAM Modulation performance relative to mask 47 CFR 90.691. (MINIMUM POWER SETTING)

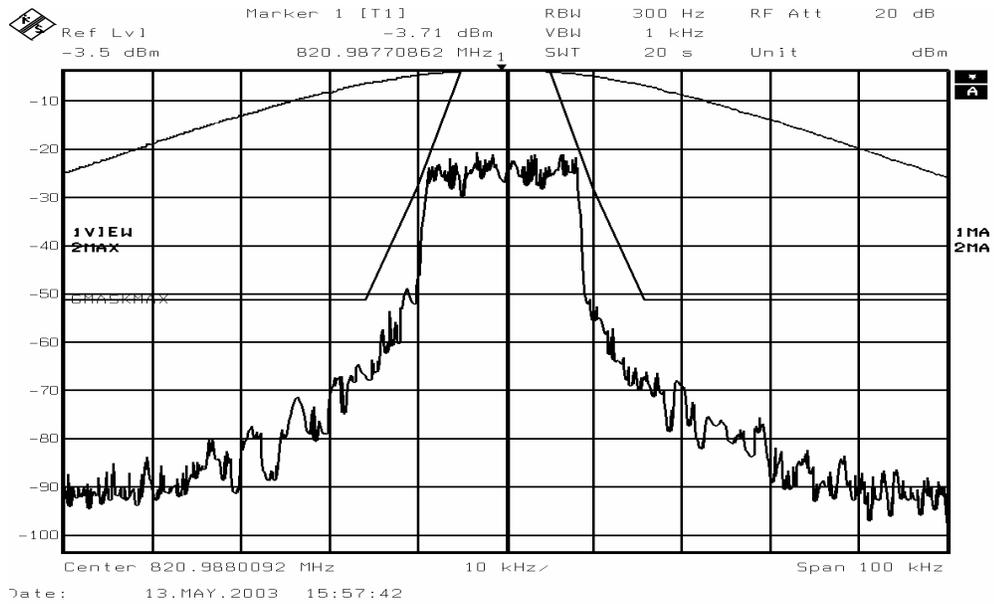


Figure 6-13: Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g) (MAXIMUM POWER SETTING)

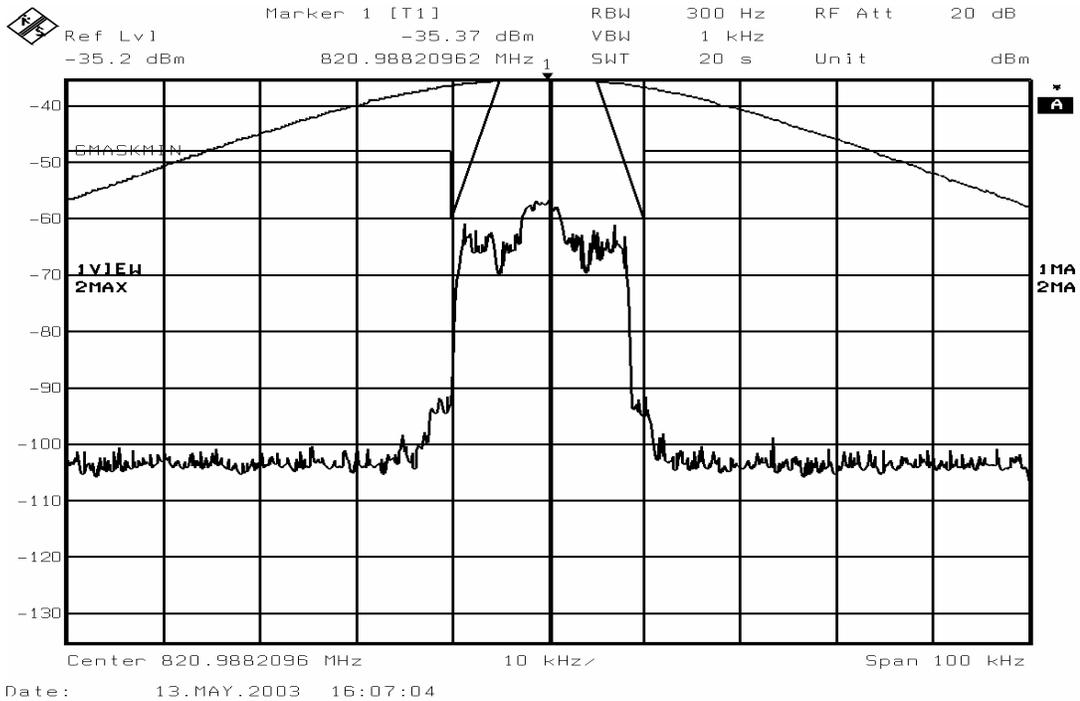


Figure 6-14: Quad-64QAM Modulation performance relative to mask 47 CFR 90.210(g) (MINIMUM POWER SETTING)

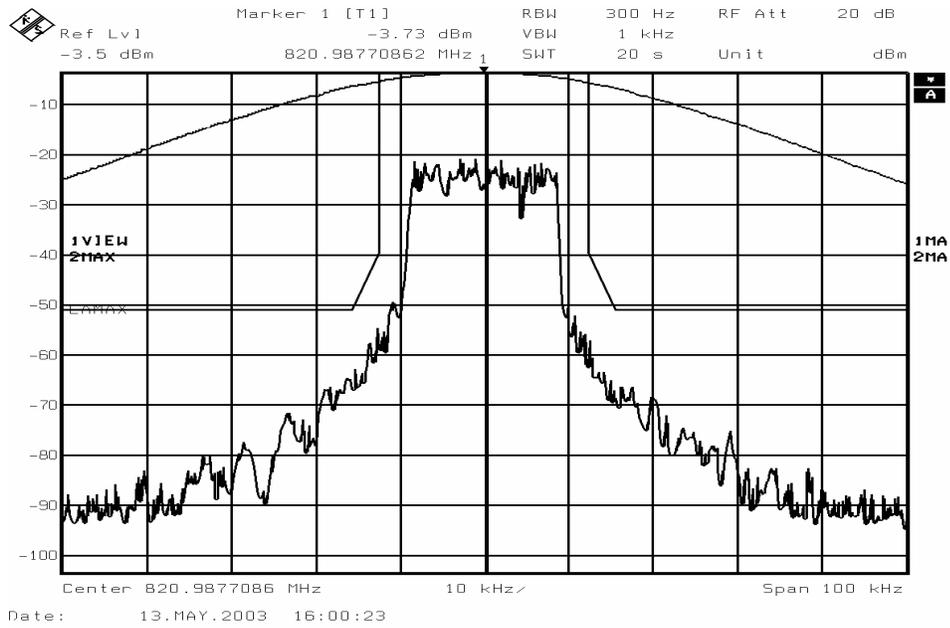


Figure 6-15: Quad-64QAM Modulation performance relative to mask 47 CFR 90.691. (MAXIMUM POWER SETTING)

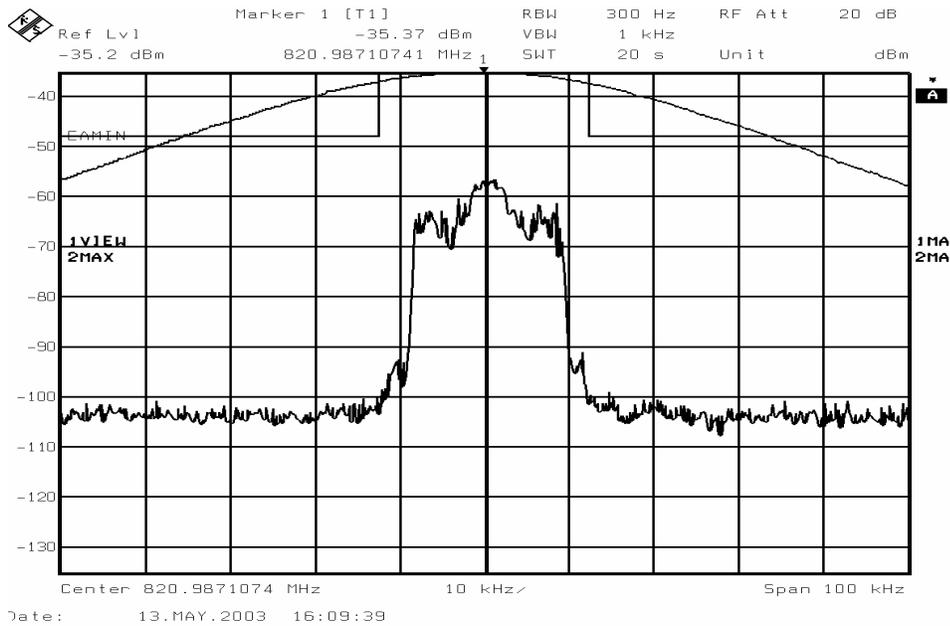


Figure 6-16: Quad-64QAM Modulation performance relative to mask 47 CFR 90.691. (MINIMUM POWER SETTING)

6.5 900 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 N_s 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/N_s is required to convert the integrator output to modulated phase. This modulation is shown in Figure 6-18.

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

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

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.

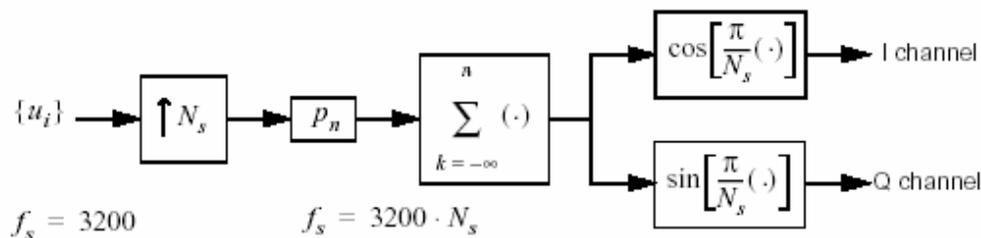


Figure 6-17. FSK Modulator

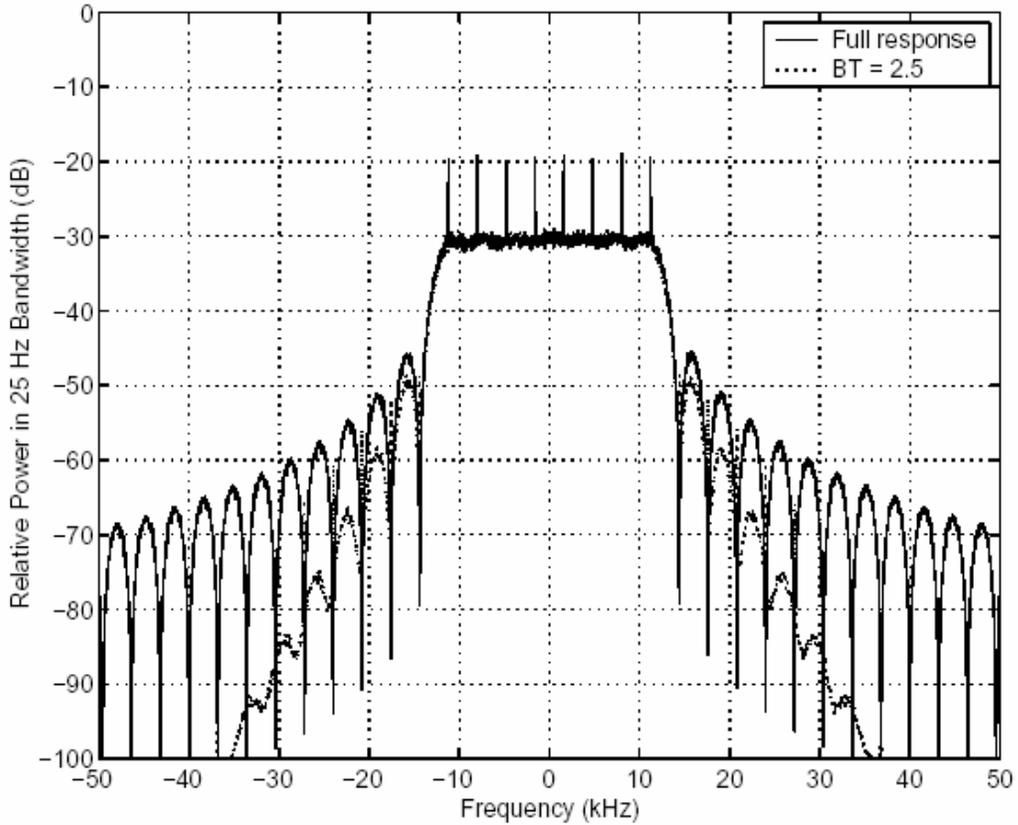


Figure 6-18. Compares the full response of the 8FSK Spectrum vs. the filtered version.

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	Freq op	Power Level	Freq op	Band Edge	Power Level
901.95 MHz	902.525 MHz	Delta (dB)	927.475 MHz	928.05 MHz	Delta (dB)
-35.3 dBm	28.7 dBm	64.0 dBc	28.8 dBm	-34.5 dBm	63.3 dBc

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.

EXHIBIT 6b: MEASURED DATA – Pursuant 47 CFR 2.1041

6.4 Radiated Spurious Emissions -- Pursuant 47 CFR 2.1053, 2.1057, 90.210(g)(3), 90.691(a)(2), 15.247(c)

6.4.1 Land Mobile band Limits

Per 90.210(g)(3) and 90.691(a)(2), radiated spurious emissions shall be attenuated below the maximum level of emission of the carrier frequency in accordance with the following formula:

$$\text{Spurious attenuation in dB} = 43 + 10 \log_{10} (P)$$

(Thus the effective limit is -13 dBm for any transmitter power level).

NOTE: Spurious emissions are dependent on the linearity of the Power Amplifier (U516) and are independent of modulation type or TDM interleaving. Thus, for the Cellular Band, emissions were tested with the radio set to Quad-16QAM.

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1612.1250	-13	<-36 dBm	<-36 dBm
2418.1875	-13	<-36 dBm	<-36 dBm
3224.2500	-13	<-36 dBm	<-36 dBm
4030.3125	-13	*	*
4836.3750	-13	*	*
5642.4375	-13	*	*
6448.5000	-13	*	*
7254.5625	-13	*	*
8060.6250	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-3 . Spurious emissions at 806.0625 (TX: High power 0.7 Watts)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1627.1250	-13	<-36	<-36
2440.6875	-13	<-36	<-36
3254.2500	-13	<-36	<-36
4067.8125	-13	*	*
4881.3750	-13	*	*
5694.9375	-13	*	*
6508.5000	-13	*	*
7322.0625	-13	*	*
8135.6250	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6- 4. Spurious emissions at 813.5625 (TX: High power 0.7 Watts)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1641.9750	-13	<-36	-38.20
2462.9625	-13	<-36	<-36
3283.9500	-13	<-36	<-36
4104.9375	-13	*	*
4925.9250	-13	*	*
5746.9125	-13	*	*
6567.9000	-13	*	*
7388.8875	-13	*	*
8209.8750	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-5 . Spurious emissions at 820.9875 ((TX: High power 0.7 Watts)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1649.9750	-13	<-36	<-36
2474.9625	-13	<-36	<-36
3299.9500	-13	<-36	<-36
4124.9375	-13	*	*
4949.9250	-13	*	*
5774.9125	-13	*	*
6599.9000	-13	*	*
7424.8875	-13	*	*
8249.8750	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-6 . Spurious emissions at 824.9875 (TX: High power 0.7 Watts)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1612.1250	-13	<-36	<-36
2418.1875	-13	*	*
3224.2500	-13	<-36	*
4030.3125	-13	*	*
4836.3750	-13	*	*
5642.4375	-13	*	*
6448.5000	-13	*	*
7254.5625	-13	*	*
8060.6250	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-3 . Spurious emissions at 806.0625 (TX: Low power 30 dB cutback)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1627.1250	-13	<-36	<-36
2440.6875	-13	*	*
3254.2500	-13	<-36	*
4067.8125	-13	*	*
4881.3750	-13	*	*
5694.9375	-13	*	*
6508.5000	-13	*	*
7322.0625	-13	*	*
8135.6250	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6- 4. Spurious emissions at 813.5625 ((TX: Low power 30 dB cutback)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1641.9750	-13	<-36	<-36
2462.9625	-13	<-36	*
3283.9500	-13	<-36	<-36
4104.9375	-13	*	*
4925.9250	-13	*	*
5746.9125	-13	*	*
6567.9000	-13	*	*
7388.8875	-13	*	*
8209.8750	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-5 . Spurious emissions at 820.9875 ((TX: Low power 30 dB cutback)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1649.9750	-13	<-36	<-36
2474.9625	-13	*	*
3299.9500	-13	<-36	<-36
4124.9375	-13	*	*
4949.9250	-13	*	*
5774.9125	-13	*	*
6599.9000	-13	*	*
7424.8875	-13	*	*
8249.8750	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-6 . Spurious emissions at 824.9875 (TX: Low power 30 dB cutback)

6.4.2 ISM Band Limits

Per 15.247(c) the peak allowable emission shall be less than 10 dBm when measured in a 100 kHz band outside the ISM Band.

NOTE 1: Spurious emissions are dependent on the linearity of the Power Amplifier (U516) and are independent of modulation type or TDM interleaving. Thus, for the Cellular Band, emissions were tested with the radio set to Quad-16QAM at both maximum and minimum radio output power settings.

NOTE 2: An asterisk () in the data indicates the spurious emission was less than -33 dBm or could not be detected due to noise limitations or ambients.*

NOTE 3: Spurious emission levels were measured with the non-detachable antenna mounted on the radio product, as in intended use.

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1805.0500	-13	<-36	<-36
2707.5750	-13	<-36	<-36
3610.1000	-13	<-36	<-36
4512.6250	-13	*	*
5415.1500	-13	*	*
6317.6750	-13	*	*
7220.2000	-13	*	*
8122.7250	-13	*	*
9025.2500	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-7. Spurious Emissions at 902.525 (ISM Band)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1831.0500	-13	<-36	<-36
2746.5750	-13	<-36	<-36
3662.1000	-13	<-36	<-36
4577.6250	-13	*	*
5493.1500	-13	*	*
6408.6750	-13	*	*
7324.2000	-13	*	*
8239.7250	-13	*	*
9155.2500	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-7. Spurious Emissions at 915.525 (ISM Band)

			Channel Spacing 25kHz S/N 364AENQHCZ
Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
1854.9500	-13	<-36	<-36
2782.4250	-13	<-36	<-36
3709.9000	-13	<-36	<-36
4637.3750	-13	*	*
5564.8500	-13	*	*
6492.3250	-13	*	*
7419.8000	-13	*	*
8347.2750	-13	*	*
9274.7500	-13	*	*

*Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

Table 6-7. Spurious Emissions at 927.475 (ISM Band)

6.7 Land Mobile Frequency Stability -- Pursuant 47 CFR 2.1055a(1) & 2.1055(d)2

Frequency stability measurements were made as described in paragraph 7.4. Because of the transmitter’s dependence on the stability of the base station oscillator, it is not possible to provide stability data for this transmitter as is commonly supplied for certification per 47 CFR 2.1055 for a radio with a locally stabilized oscillator.

The following information is provided to clarify how the transmitter attains the necessary accuracy of 2.5 PPM or better for 800MHz band operation and 1.5 PPM or better for 900MHz band operation. The transmitter’s suppressed carrier emission is produced by impressing the baseband information signal directly onto a digitally synthesized injection frequency with a channel resolution of 12.5 kHz. The synthesized frequency is derived from a temperature compensated crystal oscillator (Y600 in Figure 4-1). Transmission frequency accuracy is enhanced by the radio receiver circuitry, which causes the radio operating frequency to become locked to within 0.4 PPM of the base station once it has acquired the primary control channel. Thus the temperature and voltage frequency stability of the transmitter is within 0.4 PPM accuracy of the higher stability base station oscillator.

The AFC routine and frequency locking mechanism are implemented using both hardware and software. The hardware and software combined provide an automatic frequency control function which locks the receiver to within 0.4 PPM of the control channel oscillator. Since the base station stability is FCC regulated to be 1.5 PPM or better for the 800MHz band and 0.1 PPM or better for the 900MHz band, the absolute accuracy of the transmitter is inherently better than 1.9 PPM in the 800MHz band and 0.5 PPM in the 900MHz band. This is accomplished by programming fine synthesizer adjustments to U600 while the radio is in operation.

Transmitter frequency stability is guaranteed over all specified environmental operating conditions (battery voltage, temperature, humidity, etc.) because of the nature of the base station frequency locking mechanism. The frequency stability of the transmitter is maintained from a fully charged battery voltage of 4.2V to a low battery voltage of 3.55V, below which the radio products shuts down in order to prevent transmitter malfunction.

NOTE 1: Frequency stability is independent of modulation scheme (Quad-QPSK, Quad-16QAM, Quad-64QAM) or TDM interleaving. The data shown in following tables was taken with the radio set to transmit a Quad-16QAM signal at 820.9875 and 899.48125 MHz while locked to a Motorola R2660C service monitor. Measured frequency error points over all extreme temperature and voltage conditions are substantially smaller than the allowable error.

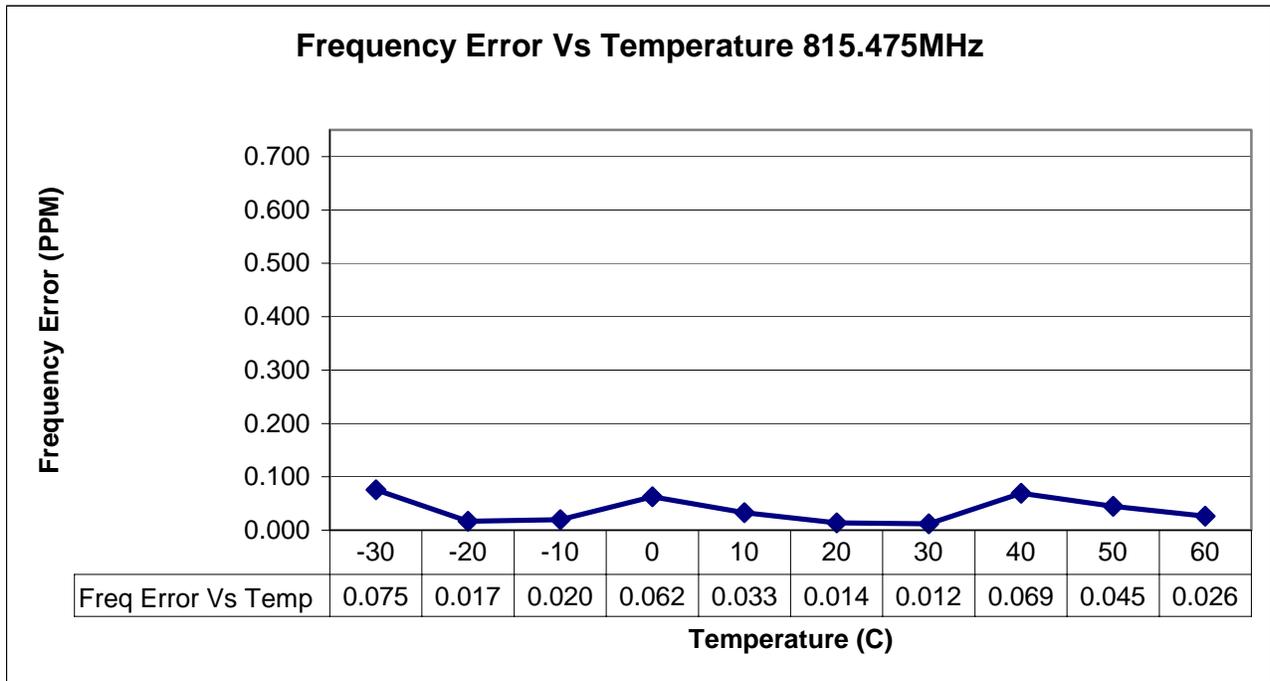


Figure 6-19: Transmitter Frequency Stability (800 MHz band) – Frequency Error vs. Temperature

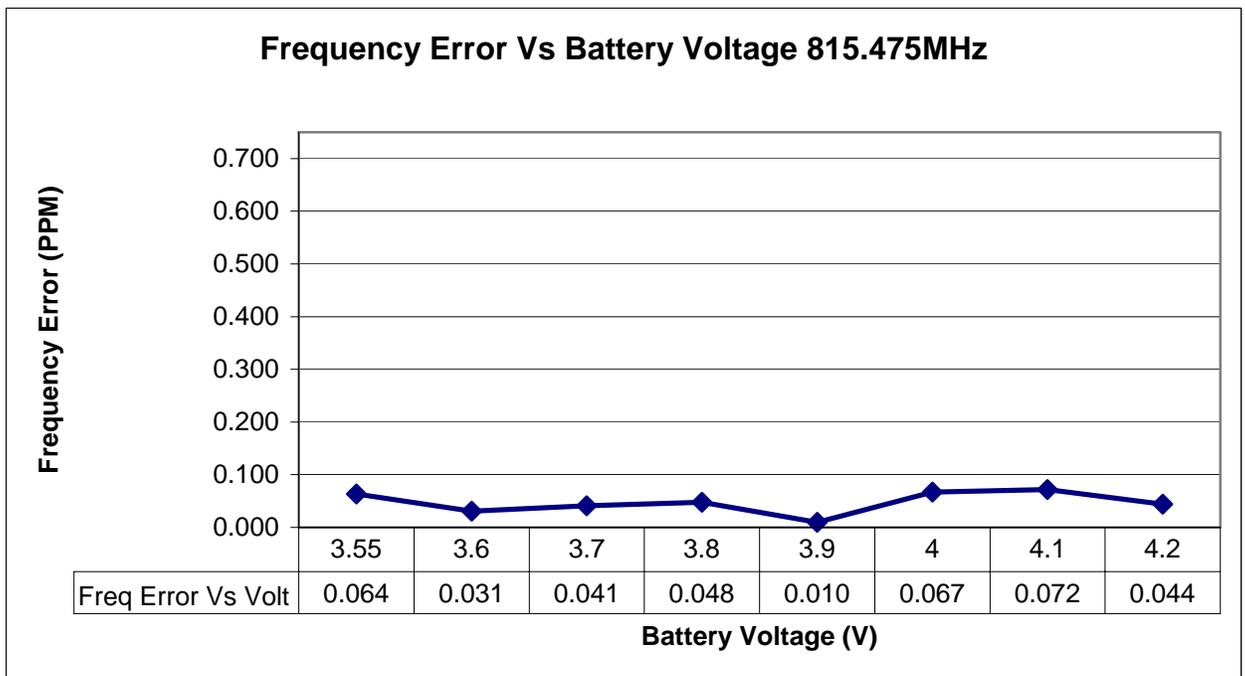


Figure 6-20: Transmitter Frequency Stability (800 MHz band) - Frequency Error vs. Voltage

6.8 Frequency Stability in the 900 MHz ISM Band -- Pursuant 47 CFR 2.1055a(1) & 2.1055(d)2

The transmitter output frequency stability in the ISM band depends upon the inherent frequency stability of the Temperature Compensated Crystal Oscillator (TCXO) used as the frequency reference in the frequency generation scheme described in section 4.2.1 of this application. The total variation of the reference TCXO frequency, including changes caused by ambient temperature, supply voltage variation, and aging of the crystal is specified to be less than 2.25 PPM. This TCXO performance results in a total variation of frequency in the 900 MHz ISM band of less than 2100 Hz from nominal frequency.

No pattern in response to the change in voltage could be identified. There were tens of hertz of noise (uncertainty) in the displayed frequency at all times. This frequency noise appears to have masked the effects of changing the supply voltage.

Frequency Error vs. Temperature and Battery Voltage @ 915.525 MHz

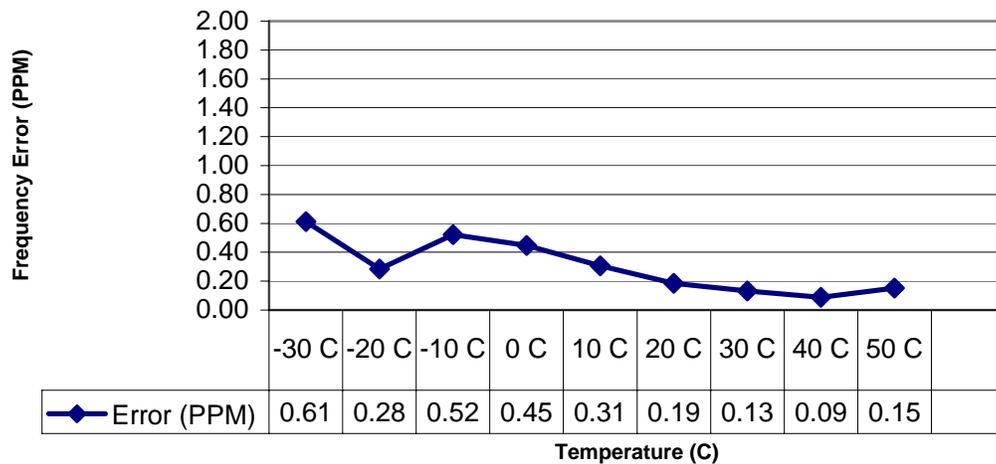


Figure 6-21. Transmitter Frequency Stability (900 MHz ISM band)- Frequency Error vs. Temperature and Voltage

Note: Total frequency variation is reported without separation of effects attributable to changing voltage supply to the transmitter being tested. The change of frequency due to changes in supply voltage could not be determined in the manual measurement made of this parameter. Random frequency variation, on the order of tens of hertz, were present in the measured frequency output. Close examination of frequency within the seconds around a voltage change did not reveal a reportable pattern associated with change in battery voltage. Test method is described in section 7.4.

6.9 Power Line Conducted Spurious Voltage -- Pursuant 47 CFR 15.207

Conducted voltage limits:

-Per 47 CFR 15.207

This radio product can transmit in Land Mobile Band while resting in a battery charger that is connected to the AC power line. Figures 6-35 and 6-36 demonstrate compliance with the cited limit. Each figure contains two measurement traces in addition to the two applicable limit lines (black traces), the higher being applicable to measurements utilizing a quasi-peak detector and the lower being applicable to measurements utilizing an average detector. The upper data trace (light blue) portrays the amplitude of

the voltage measured during sweeping with a peak detector while the lower trace (light green) represents the amplitude of the voltage measured using an average detector. These detectors facilitated the measurement process. Measurements with a quasi-peak detector lie between these bounds.

For the phase line, six local voltage maxims in Figure 6-35 were re-measured with the quasi-peak and average detector. The quasi-peak detector readings, the average detector readings and the relevant limits are tabulated in the Table 6-3. Note that the readings with either type of detector are lower than the respective limits, thus indicating full compliance.

For the neutral line, six local voltage maxims in Figure 6-36 were re-measured with the quasi-peak and average detector. The quasi-peak detector readings, the average detector readings and the relevant limits are tabulated in the Table 6-4. Note that the readings with either type of detector are lower than the respective limits, thus indicating full compliance.

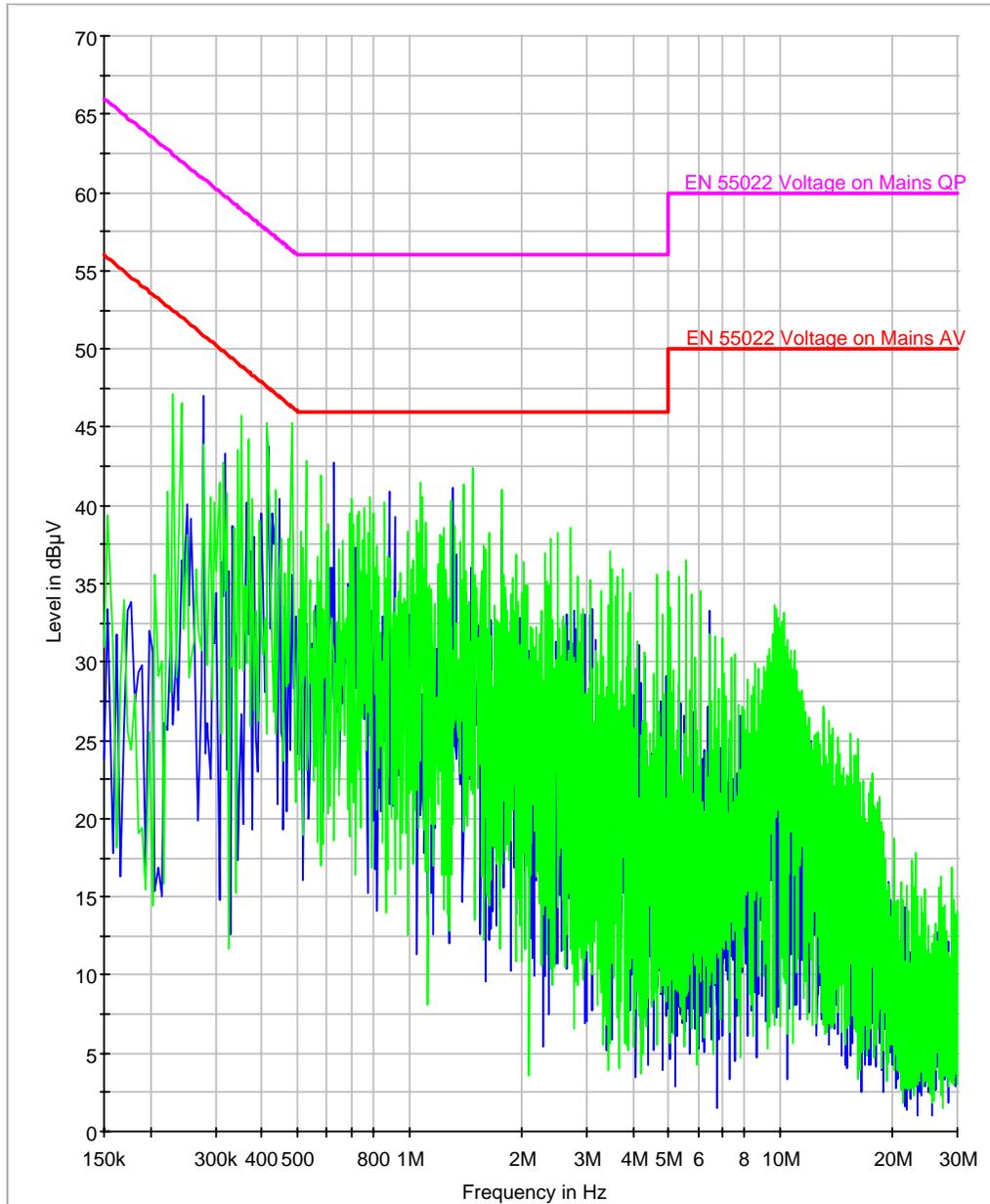


Figure 6-22: Phase Line Voltage with a Peak and Average Detector (Radio in transmit mode at 806.0625 MHz)

Frequency	All units dB μ V/m						Ph
	\leq 500kHz	QP value	QP Limit	QP Margin	Avr Value	Avr Limit	
230000	40.40	63.70	23.30	20.80	53.70	32.90	N
242000	45.60	63.36	17.76	30.30	53.36	23.06	N
354000	42.60	60.14	17.54	29.20	50.14	20.94	N
370000	42.10	59.68	17.58	30.80	49.68	18.88	N
414000	41.90	58.41	16.51	29.00	48.41	19.41	N
482000	41.20	56.46	15.26	27.10	46.46	19.36	N
278000	34.50	62.32	27.82	13.80	52.32	38.52	L1
318000	36.60	61.17	24.57	22.30	51.17	28.87	L1
446000	36.60	57.49	20.89	19.90	47.49	27.59	L1
500kHz - 5MHz							
626000	34.10	56.00	21.90	20.80	46.00	25.20	L1
882000	33.90	56.00	22.10	15.60	46.00	30.40	L1
1310000	31.60	56.00	24.40	17.30	46.00	28.70	L1

**Table 6-17: Line Voltage Data- Quasi-Peak and Average
(Radio in transmit mode at 806.0625 MHz)**

EXHIBIT 6c : MEASURED DATA – Pursuant 47 CFR 2.1041

6.7 6.10 Effective Radiated Power (ERP) – Pursuant 15.247(b)(3)

As described in Exhibit 7.1, the radiated power received at a spectrum analyzer was measured from the radio product specimen with integral antenna at 2 degrees increments as the specimen was rotated. These recorded power readings are uncalibrated ERP measurements. To convert these readings to ERP values a reference reading was obtained from a calibrated (to an ideal dipole) antenna to which was applied the same power level as the measured output power of the radio specimen. The reading at the spectrum analyzer from this calibrated reference antenna served to calibrate the spectrum analyzer readings for ERP measurements. By comparing the readings between the reference antenna and the radio product specimen, and with a measurement of the output power of the radio product specimen, this measurement also serves to determine the radio specimen antenna gain.

6.10.1 ERP in 806 MHz - 825 MHz band

The following calculations show how the reported scaled ERP was determined.

$$Measured\ ERP, dBd = 10 * \log(measured\ output\ power, mW) + measured\ antenna\ gain, dBd$$

The resulting ERP was converted to mW:

$$Measured\ ERP, mW = 10^{\left(\frac{Measured\ ERP, dBd}{10}\right)}$$

Since the measured ERP was not determined at the production maximum output power, a simple scaling is performed to 700 mW, or, in the case of the ISM Band, to 850 mW:

$$Scaled\ ERP, mW = Measured\ ERP, mW * \left(\frac{640mW}{measured\ output\ power, mW}\right)$$

The method above was used to process all rotational measurement data and, for brevity, the Table 6-18 and Figure 6-23 summarizes the maximum ERP values obtained in the two transmit.

Freq, MHz	Scaled ERP, mW	Azimuth, degrees
800	634	95
ISM (902-927)	746	100

Table 6-18. Maximum ERP Values.

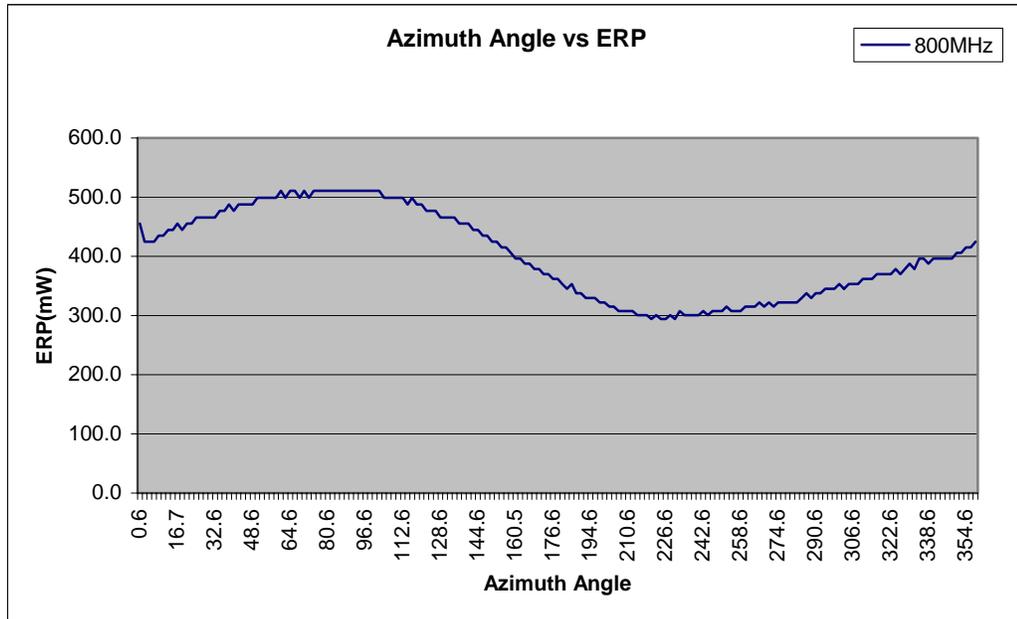


Figure 6-23. Land Mobile Band Scaled ERP vs. Azimuth Angle

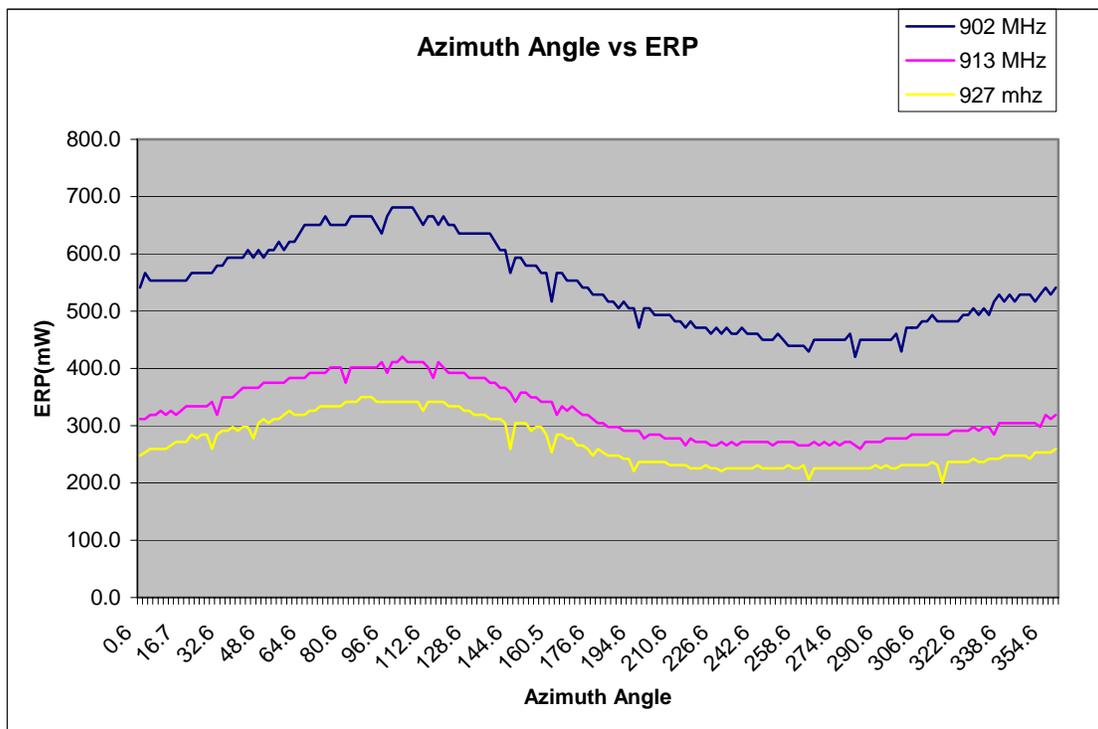


Figure 6-24 ISM Band Scaled ERP v. Azimuth Angle.

6.11 900 ISM Band Carrier Separation between Hopsets – Pursuant 47 CFR, Part 15.247(a)(1)

The separation between frequencies is measured to be 500 kHz as shown in Figure 6-41.

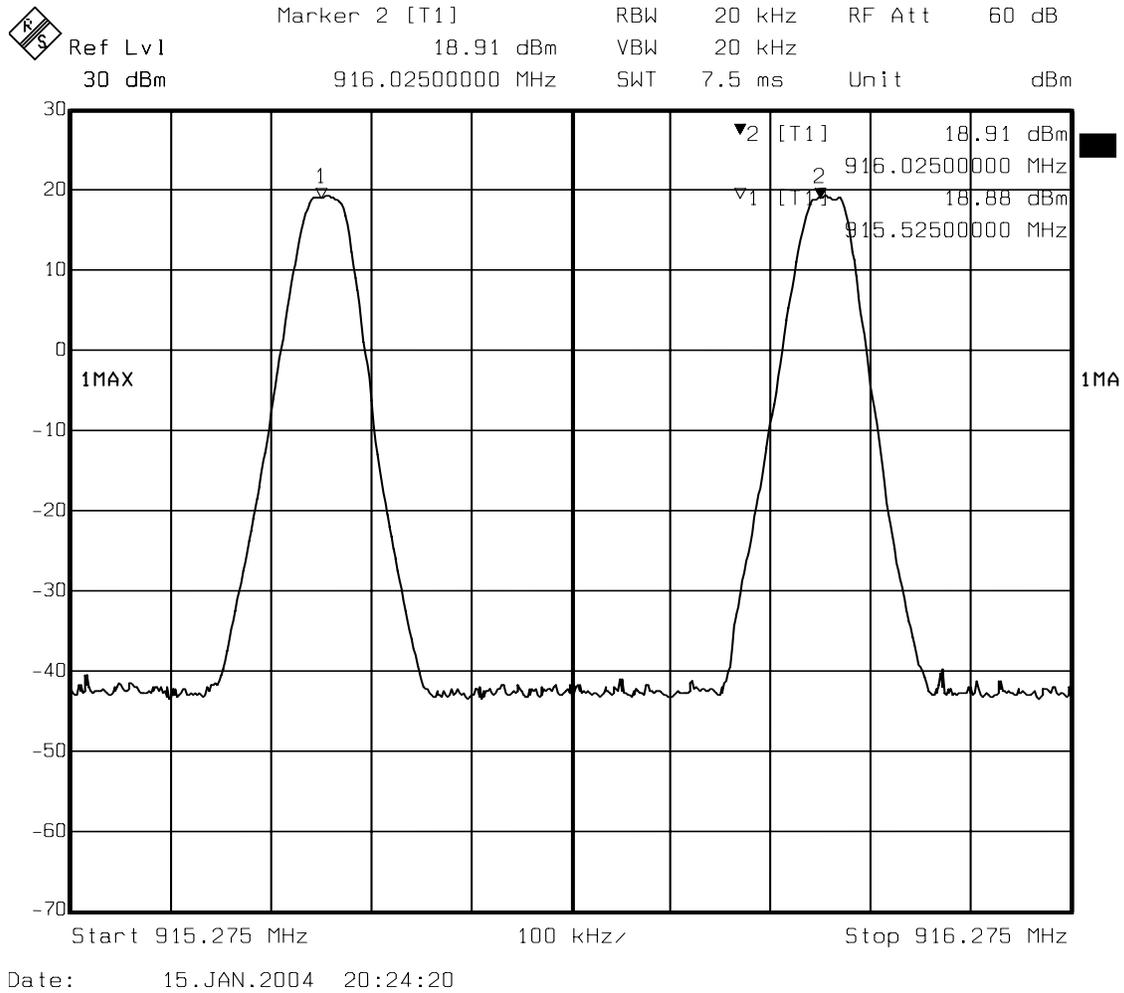


Figure 6-24. Plot of 900 MHz ISM Band adjacent channel separation within a hopset.

6.12 900 ISM Band Hopping Bandwidth between Hopsets –Pursuant 47 CRF, Part 15.247 (a)(1)(i)

Figure 6-25 shows the plot of the 8-FSK, traffic channel ISM Band spectrum with its 20 dB bandwidth of 25.65 kHz. .

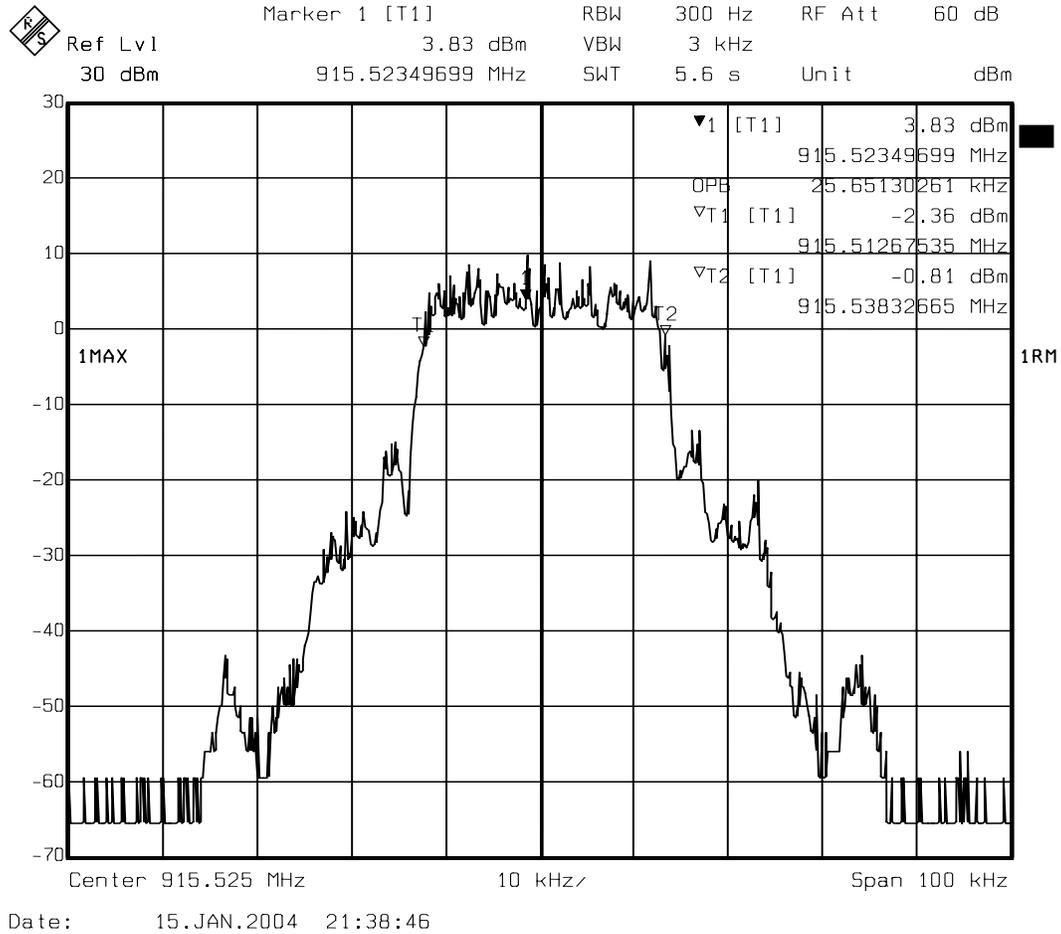


Figure 6-25. Spectrum analyzer plot of 900 MHz ISM Band 8-FSK traffic channel signal’s 99% Bandwidth

The adjacent hopset channel separation was measured between hopset @ 915.525 MHz and hopset @ 916.025 MHz which is 50 kHz.

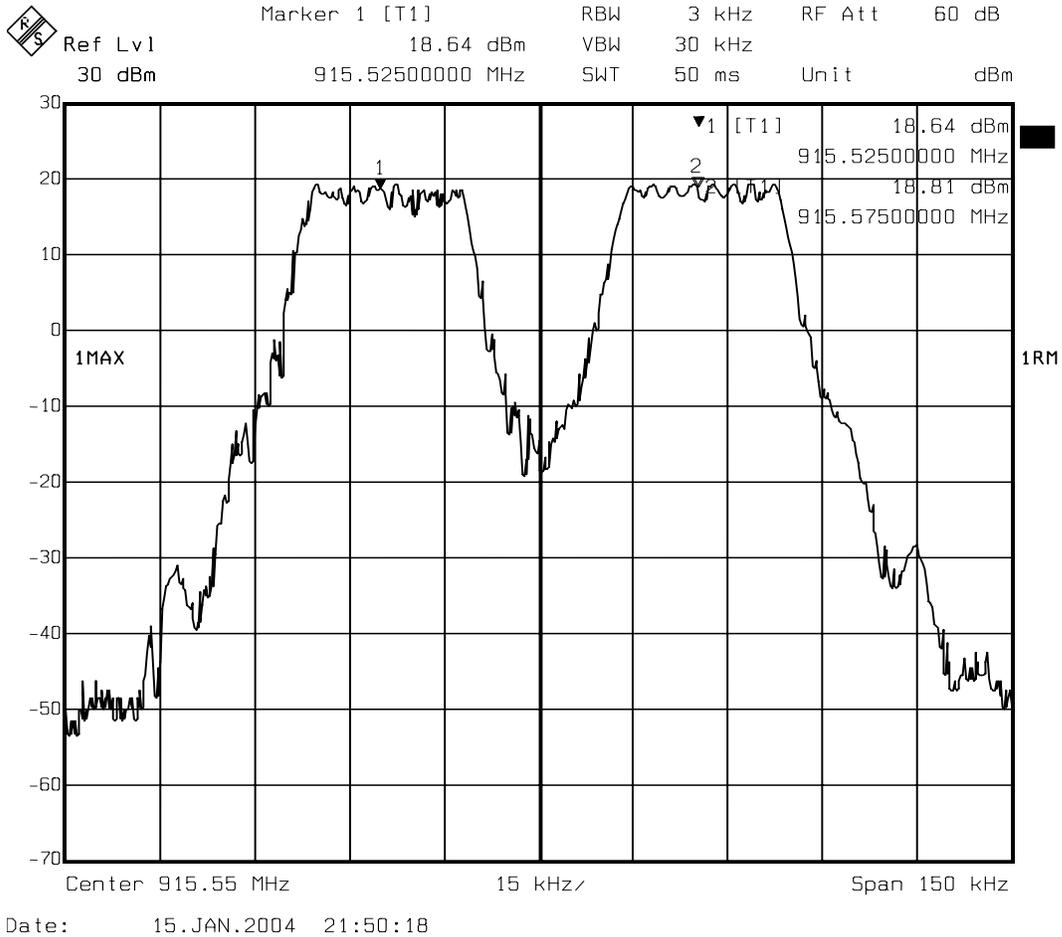


Figure 6-26. Adjacent hopset separation.

6.13 900 ISM Band Receiver Bandwidth – Pursuant 47 CFR, Part 15.247(a)(1)

The receiver bandwidth is limited by a 2-pole analog filter and digital processing that includes a 5th order sinc filter, IIR high-pass programmable bandwidth filter, and a 15th order programmable selectivity filter. The composite 3dB bandwidth is 28 kHz.

6.14 900 ISM Band Number of Hopping Frequencies – Pursuant 47 CFR, 15.247(a)(1)(i)

The 900 MHz ISM Band transmitter uses 50 frequencies within each selected hopset.

Hopset	1 st Frequency (MHz)	Progression (MHz)	Last (50th) Frequency (MHz)
1	902.525	903.025, 903.525, 904.025...	927.025
2	902.575	903.075, 903.575, 904.075...	927.075
3	902.625	903.125, 903.625, 904.125...	927.125
4	902.675	903.175, 903.675, 904.175...	927.175
5	902.725	903.225, 903.725, 904.225...	927.225
6	902.775	903.275, 903.775, 904.275...	927.275
7	902.825	903.325, 903.825, 904.325...	927.325
8	902.875	903.375, 903.875, 904.375...	927.375
9	902.925	903.425, 903.925, 904.425...	927.425
10	902.975	903.475, 903.975, 904.475...	927.475

Table 6-19. 900 MHz Band Transmitter Frequency Hopsets.

6.15 900 ISM Band Average Time of Occupancy – Pursuant 47 CFR, Part 15.247(a)(1)(i)

Worst case scenario (continuous transmission) is as follows:

85.625 ms bursts at 90 ms intervals (hop intervals)

20 seconds per window / 0.09 seconds per hop = 222.22 hops per window

222.22 hops / 50 carriers = 4.444 bursts per carrier window

4.444 bursts * 0.08569183 seconds per burst = 0.381 seconds (less than the 0.4 second requirement)

The calculations show the average time of occupancy of 0.4 seconds or less.

Verification of burst is shown in Figure 6-27 below.

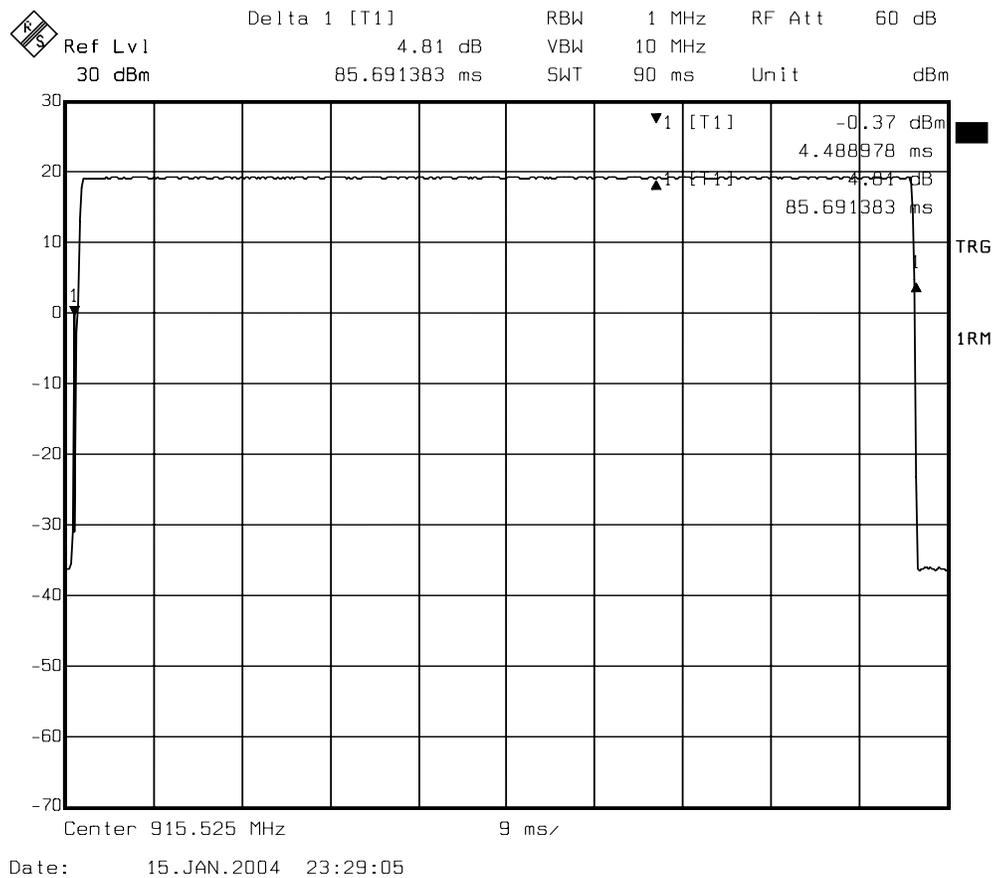


Figure 6-27. 900 MHz ISM Band Average Measured Time of Occupancy.

6.16 900 ISM Band Equal Distribution of Hopping Frequencies for Continuous Transmission – Pursuant 47 CFR, Part 15.247(a)(1)(i) & 15.247(g)

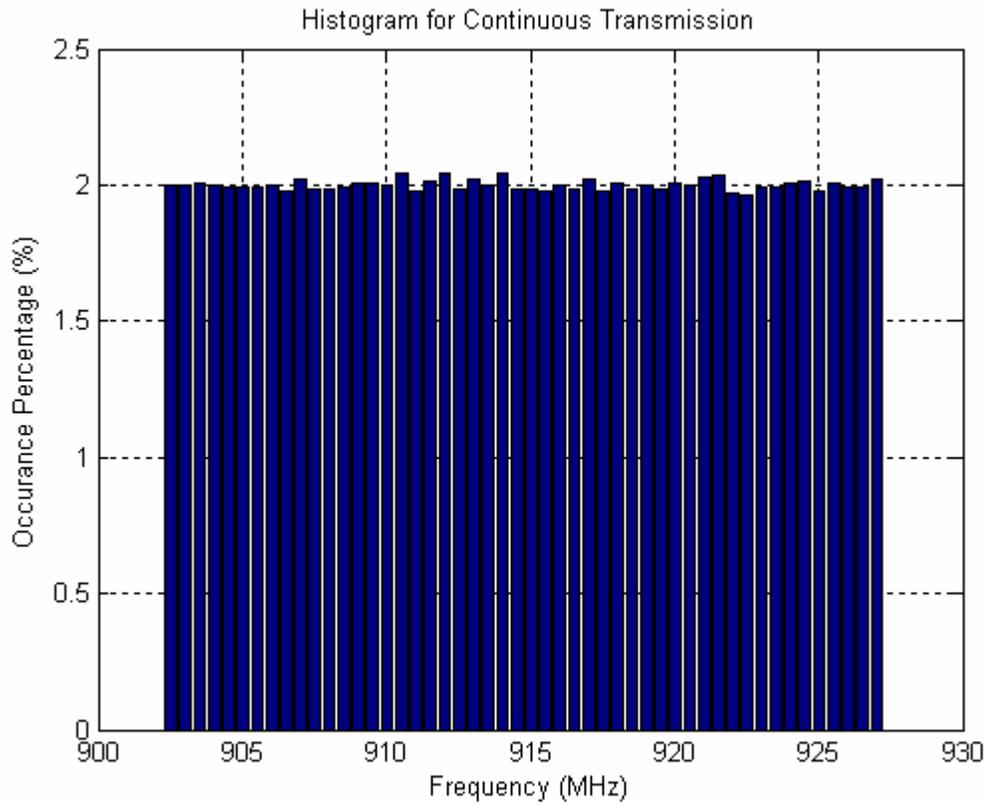


Figure 6-28. Histogram for 900 MHz ISM Band Continuous Transmission

6.17 900 ISM Band Equal Distribution of Hopping Frequencies for Discontinuous Transmission - Pursuant 47 CFR, Part 15.247(a)(1)(i) & 15.247(g)

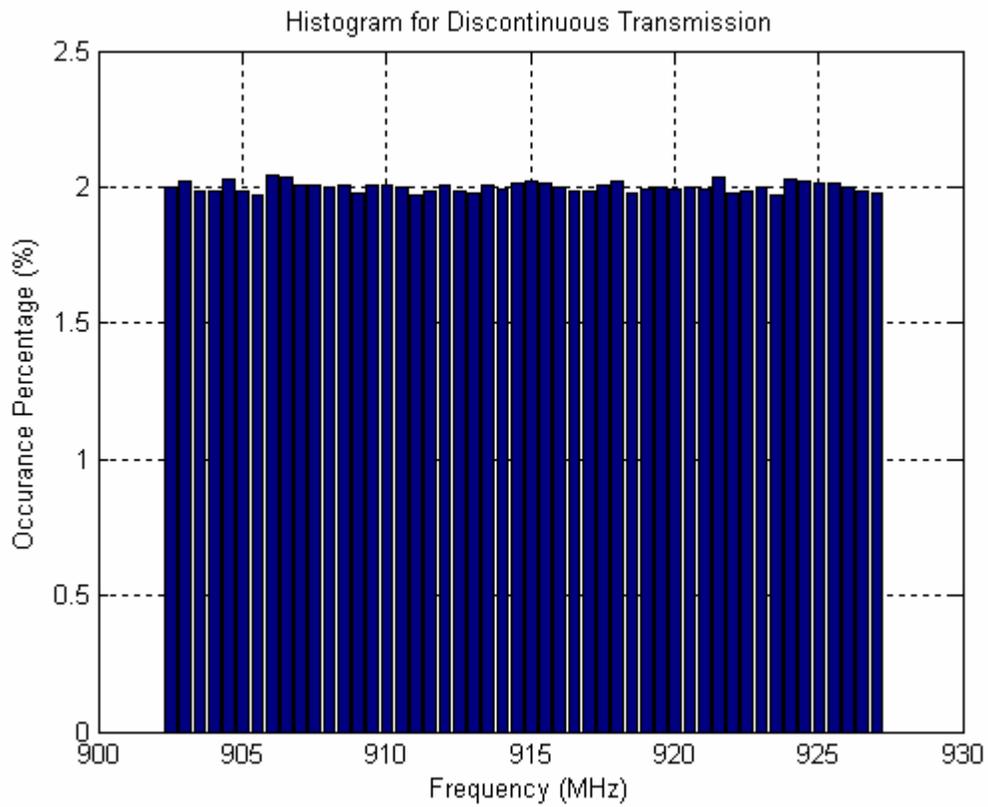


Figure 6-29. Histogram for 900 MHz ISM Band Discontinuous Transmission