6.5. Conducted Spurious Emissions Data -- Pursuant 47 CFR 2.1051, 2.1057, 90.210 (g) and 90.691.

Conducted Path: 50 Connector
Frequency: 813.5625 MHz
Output Power: 0.6 W
FCC Emission Limit: less than -13 dBm

Table 6-5: Transmitter Conducted Spurious Emissions Data - Maximum Power Setting

Description	Frequency (MHz)	Measured Power (dBm) (highest level of all modulation schemes)	Minimum Attenuation (dBc) (of all modulation schemes)	Minimum Margin to FCC Spec (dB) (at all modulation schemes)
IF	150.9000	<-40 dBm	> 67.8	> 27
2*IF	301.8000	<-40 dBm	> 67.8	> 27
LO	964.4625	<-40 dBm	> 67.8	> 27
IF + LO	1115.3625	<-40 dBm	> 67.8	> 27
2*FUND	1627.1250	-38	66	25
3*FUND	2440.6875	<-40 dBm	> 67.8	> 27
4*FUND	3254.2500	-28	56	15
5*FUND	4067.8125	<-40 dBm	> 67.8	> 27
6*FUND	4881.3750	<-40 dBm	> 67.8	> 27
7*FUND	5694.9375	<-40 dBm	> 67.8	> 27
8*FUND	6508.5000	<-40 dBm	> 67.8	> 27
9*FUND	7322.0625	<-40 dBm	> 67.8	> 27
10*FUND	8135.6250	<-40 dBm	> 67.8	> 27

Table 6-6: Transmitter Conducted Spurious Emissions Data - Minimum Power Setting

Description	Frequency (MHz)	Measured Power (dBm) (highest level of all modulation schemes)	Minimum Attenuation (dBc) (of all modulation schemes)	Minimum Margin to FCC Spec (dB) (at all modulation schemes)
IF	150.9000	<-40 dBm	> 44	> 27
2*IF	301.8000	<-40 dBm	> 44	> 27
LO	964.4625	<-40 dBm	> 44	> 27
IF + LO	1115.3625	<-40 dBm	> 44	> 27
2*FUND	1627.1250	<-40 dBm	> 44	> 27
3*FUND	2440.6875	<-40 dBm	> 44	> 27
4*FUND	3254.2500	<-40 dBm	> 44	> 27
5*FUND	4067.8125	<-40 dBm	> 44	> 27
6*FUND	4881.3750	<-40 dBm	> 44	> 27
7*FUND	5694.9375	<-40 dBm	> 44	> 27
8*FUND	6508.5000	<-40 dBm	> 44	> 27
9*FUND	7322.0625	<-40 dBm	> 44	> 27
10*FUND	8135.6250	<-40 dBm	> 44	> 27

6.6. Frequency Stability Data -- Pursuant 47 CFR 2.1055

Measurements were made per method described in paragraph 7.5
Because of its 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 type acceptance per 47 CFR 2.055 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.

The transmitter's suppressed carrier emission is produced by mixing of modulated intermediate frequency with a higher, digitally synthesized injection frequency with a resolution of 12.5 kHz. Both of these frequencies are derived from a temperature compensated crystal oscillator (Y300 in figure 4.1 and 4.2).
Transmission frequency accuracy is enhanced by the radio receiver circuitry which causes the radio operating frequency to become locked to within 0.2 PPM of the base station once it has acquired the primary control channel. Thus the temperature and voltage performance of the transmitter is within 0.4PPM 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 0.2 PPM of the control channel oscillator. This degree of AFC accuracy is determined by the bandwidth of the phase locked loop within the IC. Since the base station stability is FCC regulated to be 1.5 PPM or better, the absolute accuracy of the transmitter is □1.9 PPM.

Transmitter frequency stability is guaranteed over all specified environmental operating conditions (supply voltage, temperature, humidity, etc), because of the nature of the base station frequency locking mechanism. The externally supplied voltage, which is 13.8V ± 20%, has no effect on the frequency stability since the internal transceiver module receives a regulated supply which is constant for this range of external voltages.

Frequency stability is independent of modulation scheme (QPSK, Quad-16QAM, Quad-64QAM). The data shown in Tables 6-15 and 6-16 were taken with the radio set to transmit at 820.4625 MHz and Quad-16QAM while locked to a R2660C service monitor.

Table 6-7: Transmitter Frequency Stability Data - Frequency vs. Temperature

Temperature (□Centigrade)	Frequency Error (Hz)	Frequency Error (ppm)
-30	120	0.15
-20	122	0.15
-10	114	0.14
0	106	0.13
10	115	0.14
20	108	0.13
30	115	0.14
40	113	0.14
50	132	0.16
60	117	0.14

Table 6-8: Transmitter Frequency Stability @ 30º Centigrade. Frequency vs. Supply Voltage.

Voltage (Volts)	Error (Hz)	Error (ppm)
11	90	0.11
12	90	0.11
13	90	0.11
14	90	0.11
15	90	0.11
16	90	0.11

Figure 6-19: Frequency Stability vs. Temperature