Table 6-3: 813.5625MHz. Radiated Transmitter Emissions at Minimum Power (0.20mW).
(No chart is shown because all measured emissions were below –40dBm)

Description	Frequency (MHz)	FCC Maximum Emission Limit (dBm)	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)	
			Horizontal Polarization	Vertical Polarization
IF	150.9000	-13	*	*
2X IF	301.8000	-13	*	*
LO	964.4625	-13	*	*
IF + LO	1115.3625	-13	*	*
2X FUND	1627.1250	-13	< -40	< -40
3X FUND	2440.6875	-13	< -40	< -40
4X FUND	3254.2500	-13	*	*
5X FUND	4067.8125	-13	*	*
6X FUND	4881.3750	-13	*	*
7X FUND	5694.9375	-13	*	*
8X FUND	6508.5000	-13	*	*
9X FUND	7322.0625	-13	*	*
10XFUND	8135.6250	-13	*	*

**** Note: Measured noise floor, limited by test setup and equipment.***

Table 6-4: 824.9875MHz. Radiated Transmitter Emissions at Minimum Power (0.20mW).
(No chart is shown because all measured emissions were below –40dBm)

Description	Frequency (MHz)	FCC Maximum Emission Limit (dBm)	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)	
			Horizontal Polarization	Vertical Polarization
IF	150.9000	-13	*	*
2X IF	301.8000	-13	*	*
LO	975.8875	-13	*	*
IF + LO	1126.7875	-13	*	*
2X FUND	1649.9750	-13	< -40	< -40
3X FUND	2474.9625	-13	< -40	< -40
4X FUND	3299.9500	-13	*	*
5X FUND	4124.9375	-13	*	*
6X FUND	4949.9250	-13	*	*
7X FUND	5774.9125	-13	*	*
8X FUND	6599.9000	-13	*	*
9X FUND	7424.8875	-13	*	*
10XFUND	8249.8750	-13	*	*

**** Note: Measured noise floor, limited by test setup and equipment.***

6.5. Conducted Spurious Emissions Data -- Pursuant 47 CFR 2.991, 2.997, 90.210 (g) and 90.691.

Conducted Path:	50 Ohm Connector
Frequency:	806 – 825 MHz
Output Power:	0.6 W
FCC Emission Limit:	less than -13 dBm

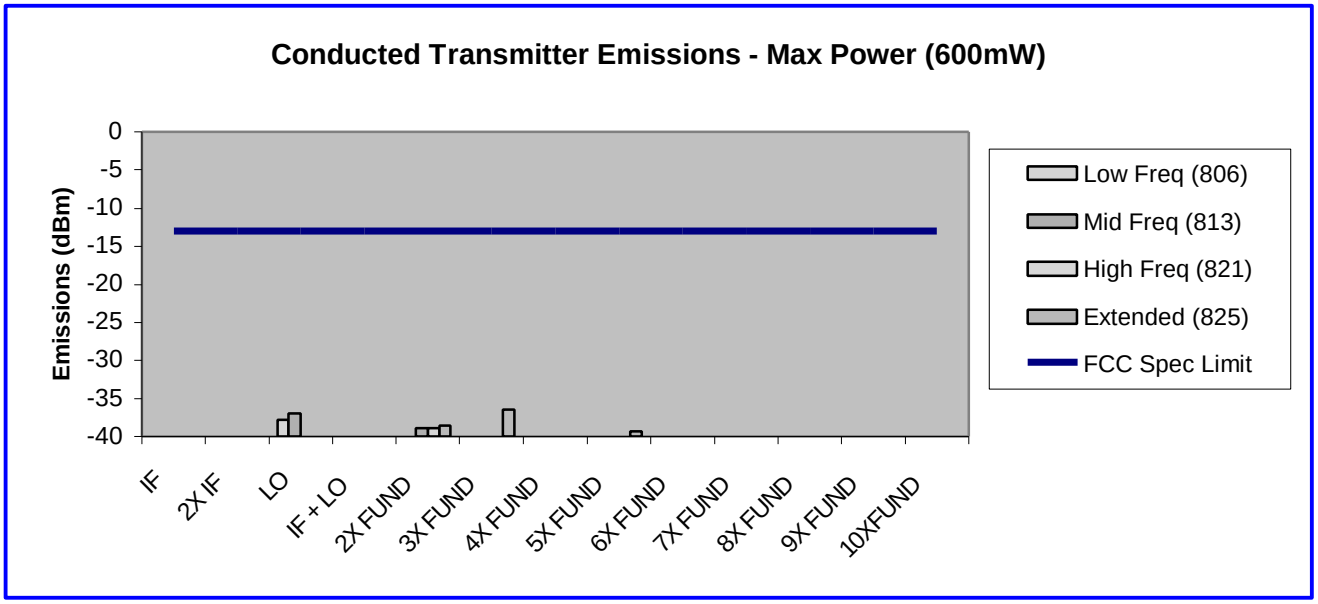


Table 6-5: 813.5625 MHz Transmitter Conducted Spurious Emissions Data - Max. Power

Description	Frequency (MHz)	Power (dBm)	Margin to FCC Spec Limit (dB)
IF	150.9000	-58	45
2*IF	301.8000	-59	46
LO	964.4625	-37	24
IF + LO	1115.3625	-58	45
2*FUND	1627.1250	-39	26
3*FUND	2440.6875	-45	32
4*FUND	3254.2500	-44	31
5*FUND	4067.8125	-55	42
6*FUND	4881.3750	-60	47
7*FUND	5694.9375	-69	56
8*FUND	6508.5000	-67	54
9*FUND	7322.0625	-72	59
10*FUND	8135.6250	-69	56

Table 6-6: 813.5625 MHz Transmitter Conducted Spurious Emissions Data - Min. Power

(No chart is shown because all measured emissions were below –40dBm)

Description	Frequency (MHz)	Power (dBm)	Margin to FCC Spec Limit (dB)
IF	150.9000	-59	46
2*IF	301.8000	-59	46
LO	964.4625	-57	44
IF + LO	1115.3625	-59	46
2*FUND	1627.1250	-83	70
3*FUND	2440.6875	-82	69
4*FUND	3254.2500	-75	62
5*FUND	4067.8125	-78	65
6*FUND	4881.3750	-77	64
7*FUND	5694.9375	-76	63
8*FUND	6508.5000	-72	59
9*FUND	7322.0625	-74	61
10*FUND	8135.6250	-69	56

Table 6-7: 824.9875 MHz Transmitter Conducted Spurious Emissions Data - Max. Power

Description	Frequency (MHz)	Power (dBm)	Margin to FCC Spec Limit (dB)
IF	150.9000	-59	46
2*IF	301.8000	-60	47
LO	975.8875	-41	28
IF + LO	1126.7875	-41	28
2*FUND	1649.9750	-39	26
3*FUND	2474.9625	-36	23
4*FUND	3299.9500	-45	32
5*FUND	4124.9375	-39	26
6*FUND	4949.9250	-46	33
7*FUND	5774.9125	-49	36
8*FUND	6599.9000	-51	38
9*FUND	7424.8875	-57	44
10*FUND	8249.8750	-52	39

Table 6-8: 824.9875 MHz Transmitter Conducted Spurious Emissions Data - Min. Power
(No chart is shown because all measured emissions were below –40dBm)

Description	Frequency (MHz)	Power (dBm)	Margin to FCC Spec Limit (dB)
IF	150.9000	-59	46
2*IF	301.8000	-60	47
LO	975.8875	-56	43
IF + LO	1126.7875	-59	46
2*FUND	1649.9750	-70	57
3*FUND	2474.9625	-75	62
4*FUND	3299.9500	-76	63
5*FUND	4124.9375	-83	70
6*FUND	4949.9250	-81	68
7*FUND	5774.9125	-80	67
8*FUND	6599.9000	-76	63
9*FUND	7424.8875	-78	65
10*FUND	8249.8750	-74	61

6.6. Frequency Stability Data -- Pursuant 47 CFR 2.995

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 2.995 (b) 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 a 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 0.4PPM 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 0.4 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 (battery voltage, temperature, humidity, etc.) because of the nature of the base station frequency locking mechanism. The frequency stability of the transmitter is maintained until the battery voltage drops below 3.0 volts. Any voltage below 3.0 volts is outside the specified operating range of the transmitter and linearity is degraded below 3.0 volts. For this reason, the radio shuts down (while in TX mode) when the voltage drops below 3.0 volts. If the battery voltage raises above 5.5 volts the frequency stability of the radio is guaranteed by the voltage regulator that powers the frequency generation unit.

Frequency stability is independent of modulation scheme (QPSK, Quad-16QAM, Quad-64QAM). The data shown in Tables 6-21 and 6-22 were taken with the radio set to transmit at 815 MHz and Quad-16QAM while locked to a R2660C service monitor.

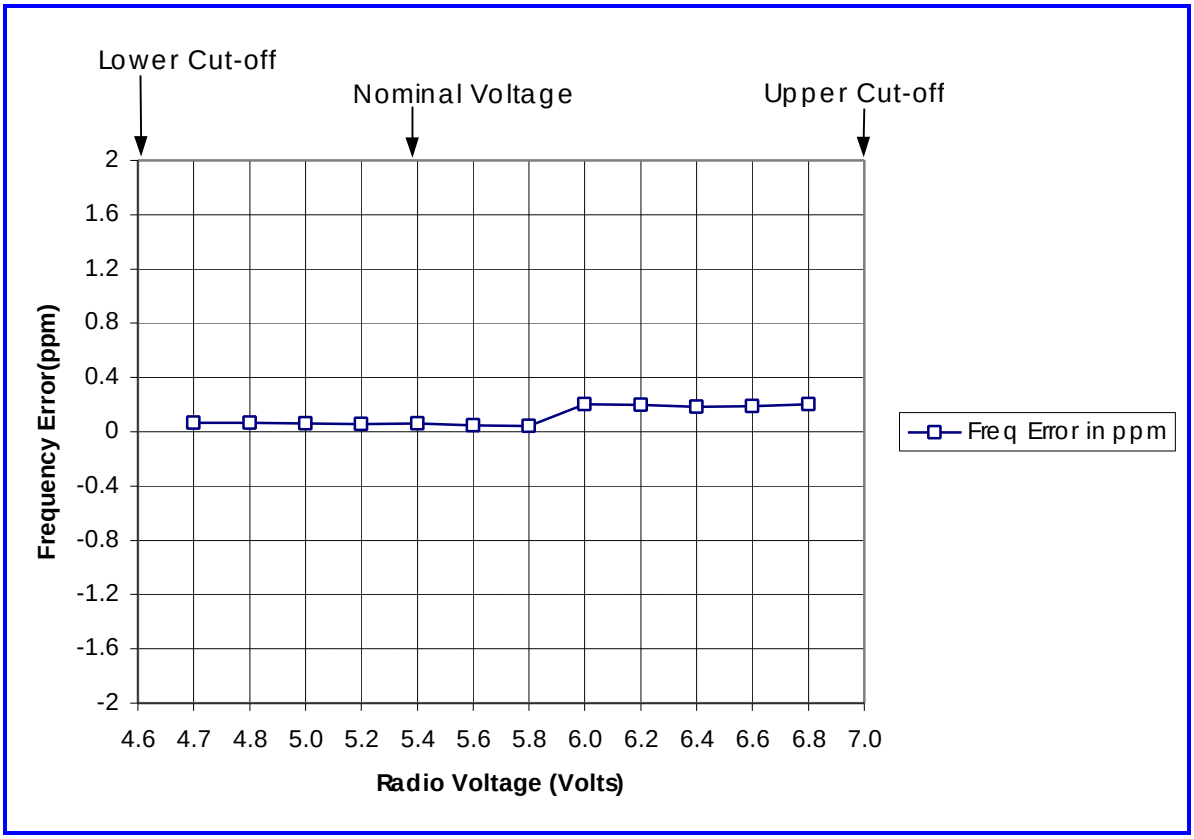
Table 6-9: Transmitter Frequency Stability Data - Frequency vs. Temperature

Temperature (□Centigrade)	Frequency Error (Hz)	Frequency Error (ppm)
-30	28	0.034
-20	83	0.102
-10	13	0.016
0	25	0.031
10	31	0.038
20	32	0.039
30	36	0.044
40	28	0.034
50	16	0.020
60	25	0.031

Table 6-10: Transmitter Frequency Stability Data - Frequency vs. Voltage

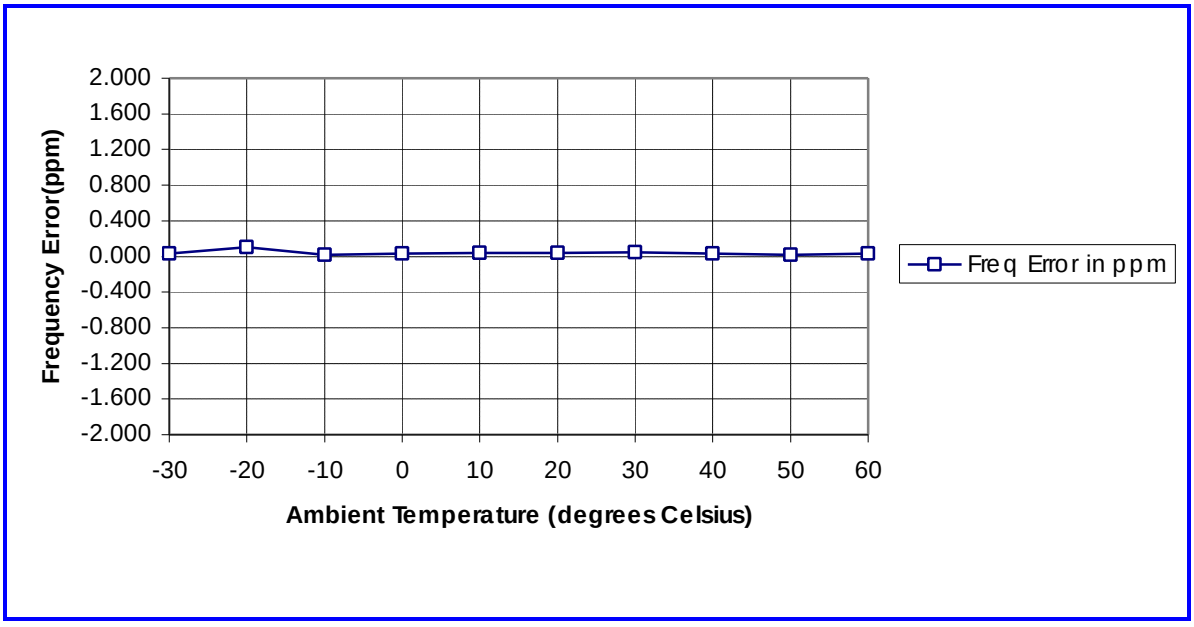
Voltage (Volts)	Error in (Hz)	Error in (ppm)
4.7	53	0.065
4.8	52	0.064
5.0	50	0.061
5.2	48	0.059
5.4	51	0.063
5.6	37	0.045
5.8	36	0.044
6.0	165	0.202
6.2	163	0.200
6.4	150	0.184
6.6	155	0.190
6.8	166	0.204

Figure 6-17: Frequency Stability vs. Voltage



*Radio resets at 4.3 Volts

Figure 6-18: Frequency Stability vs. Temperature



6.7. Power Line Conducted Spurious Emissions -- Pursuant 47 CFR 15.107

The portable RF device can transmit and receive while resting in a battery charger that is connected to the AC power line. As shown in Figures 6-25 to 6-30 the maximum emissions of 35.68dB V (60.8 microvolts) did not exceed 48dB V (250 microvolts) over the frequency range 450 kHz to 30 MHz. NOTE: the 10dB offset is due to an attenuator (external pad) in the measurement equipment set-up.

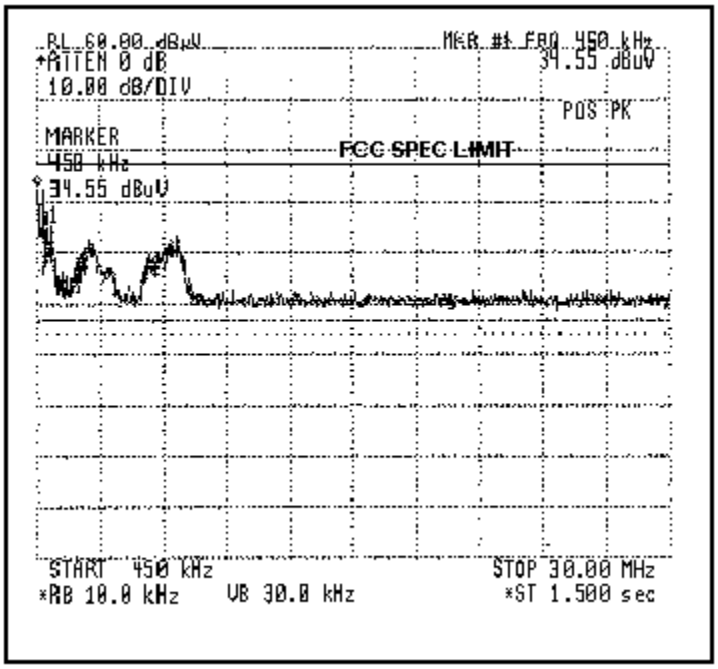


Figure 6-19: Radio while in RX mode and measuring the neutral line.

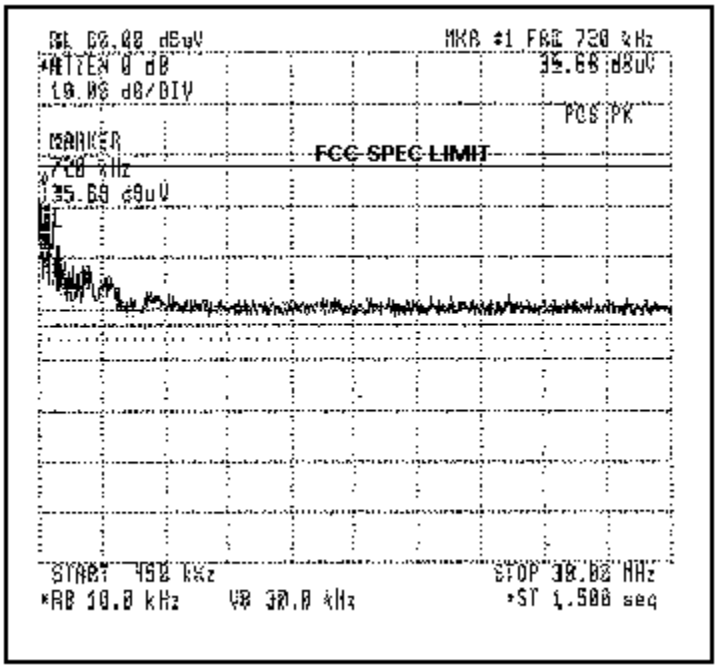


Figure 6-20: Radio while in RX mode and measuring line one.

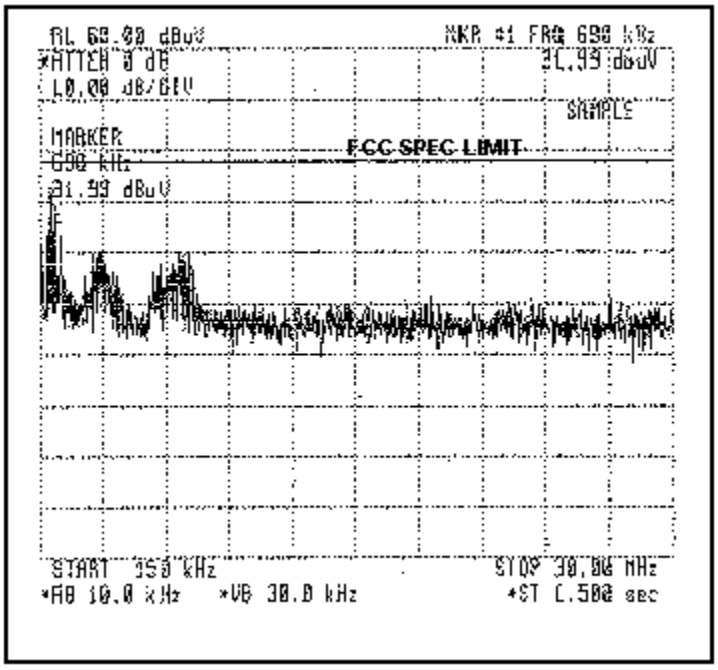


Figure 6-21: Radio while in TX mode (Max. Power) and measuring the neutral line.

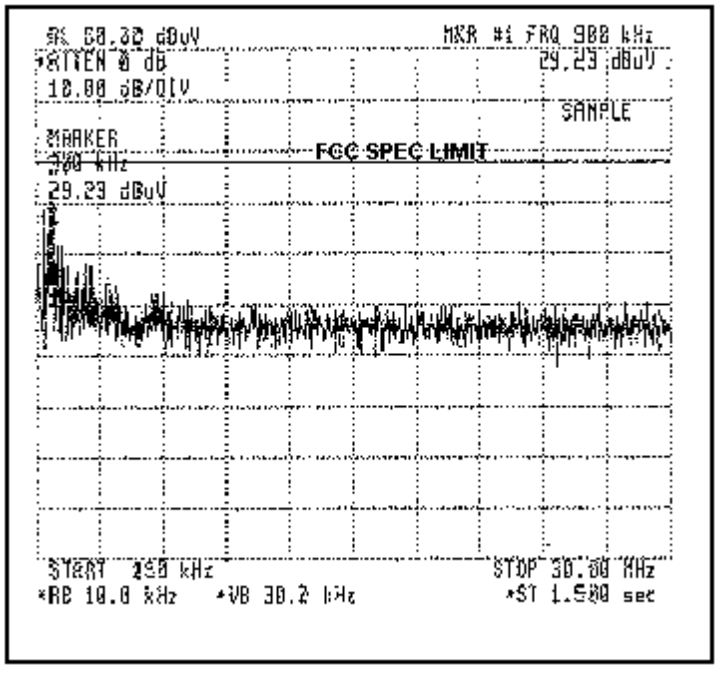


Figure 6-22: Radio while in TX mode (Max. Power) and measuring line one.

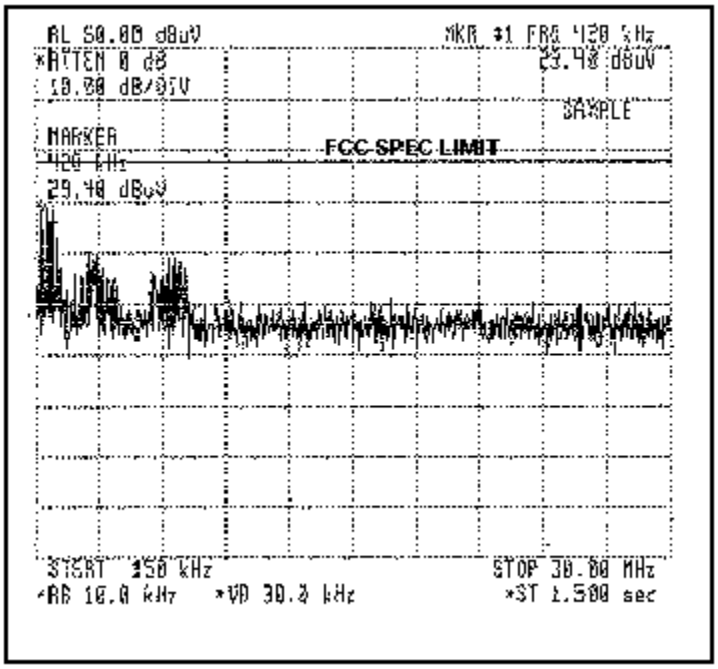


Figure 6-23: Radio while in TX mode (Min. Power) and measuring the neutral line.

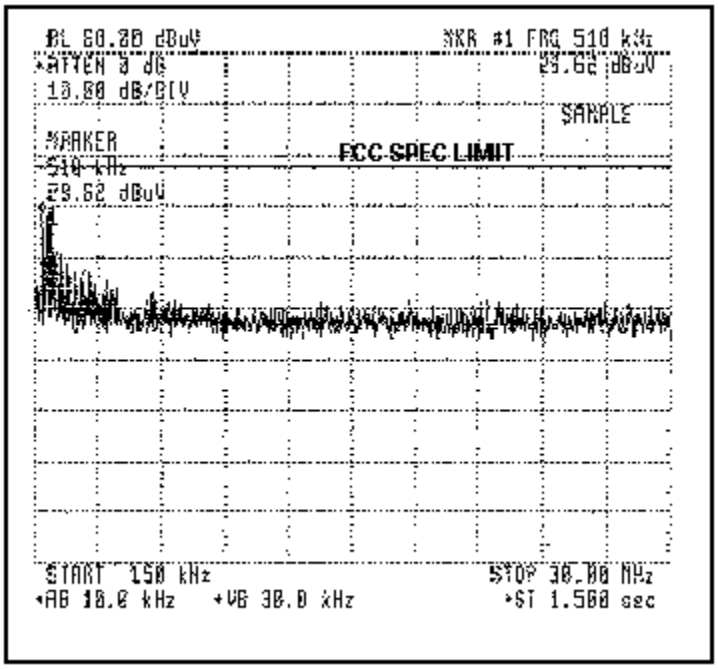


Figure 6-24: Radio while in TX mode (Min. Power) and measuring line one.