Exhibit 7 - Report of Measurements

7.0.1 ***General Measurement Procedure §2.947, 2.1041, 2.1057***

Transmitter testing was conducted using generally accepted engineering laboratory techniques and in accordance with TIA/EIA TSB78 titled Land Mobile Linear Analog Modulation Communications Equipment Measurement and Performance Standards (equivalent to TIA/EIA 603). ANSI C63.4 also applies for spurious radiation testing.

Because the transmitter tuning range spans only ½ percent of the output frequency range***, all transmitter tests were conducted at the center of the range on FCC channel 100 for base stations, i.e., 220.4975 MHz.***

Frequencies investigated during the Spurious Radiation at Antenna Terminals Test were in the range 4 MHz to 2.205 GHz representing the lowest clock frequency and the Test Radio's tenth harmonic frequency, respectively. Frequencies investigated for the Spurious Radiation Test were from 30 MHz to 2.205 GHz.

The RF network analyzer and the RF signal source were used in checking the attenuation of the RF attenuator and associated coax connecting cables and adapters over the frequency search range.

Additional procedural details are presented along with the specific procedures above.

7.0.2 ***Measurement Facilities***

All but the spurious radiation testing was conducted at the applicant's engineering facilities in Burr Ridge, IL. Elite Electronic Engineering personnel using their own equipment at their FCC registered 3-meter test site in Downers Grove, IL conducted the spurious radiation testing.

7.0.3 ***Equipment List §2.947(d)***

Instrument	Manufacturer and Model	Next Cal. Due
Variable Isolated AC Supply	Heathkit Model IP5220	NA
RF Power Attenuator	Bird 100A-MFN-30	NA
Power Meter	Agilent E4416A	5/14/04
Peak and Average Power Sensor	Agilent E9321A	5/9/04
Vector Signal Analyzer	HP 89441A	5/14/04
Frequency Counter 1.5GHz	Agilent 53181A	NA
Universal Counter 225MHz	Agilent 53131A	5/13/04
Frequency Standard (GPS)	TrueTime Model XL-DC	NA
Temperature Chamber	Tenney Jr.	NA
Temperature Controller	Watlow Series 942	NA
Digital Voltmeter	Fluke 187	NA
RF Signal Source	Agilent E4437B	8/17/03
Personal Computer	Compaq Armada 7400	NA

7.1 ***RF Power Output §2.1046***

Measured RF Power Output
100 W PEP

Additional Requirements:

- Limitations on power and antenna height, §90.729 (a)

  "The permissible effective radiated power (ERP) with respect to antenna heights for land mobile, paging, or fixed stations transmitting on frequencies in the 220 - 221 MHz band shall be determined from the following Table. These are maximum values and applicants are required to justify power levels requested".

ERP vs. Antenna Height Table [2]	
Antenna height above average terrain (HAAT), meters	Effective radiated power, watts [1]
Up to 150	500
150 to 225	250
225 to 300	125
300 to 450	60
450 to 600	30
600 to 750	20
750 to 900	15
900 to 1050	10
Above 1050	5

1 Transmitter PEP shall be used to determine ERP
2 These power levels apply to stations used for land mobile, paging, and fixed operations.

- Emission Masks, §90.210 (f)

  Complies with emission mask §90.210 (f) during power output test. Please refer to 7.3 Occupied Bandwidth §2.1049

Procedure:

The Test Radio was previously tuned up on 220.4975 MHz in accordance with the Tune-up procedure. The equipment was connected as shown in Figure 7.1 below. Total RF attenuation between the Test Radio antenna terminals and the wattmeter was measured to be 48.8 dB (including cable losses). Wattmeter power offset was adjusted by an equal and opposite amount so that the wattmeter would indicate power in peak watts when adjusted as per the manufacturer's instructions.

A computer terminal was used to feed a stream of data to obtain a continuous pseudo-random QPSK test modulation, as well as controlling the transmit key. The selected modulation represents the maximum amplitude and symbol rate conditions that occur during regular operation.

After recording the peak watts reading, the wattmeter was removed and the spectrum analyzer was attached in its place. The spectrum analyzer was set initially to 100kHz span and 10kHz resolution bandwidth (i.e., 2.5 times the authorized bandwidth) and peak hold. The reference level of the spectrum analyzer was then set to the peak output power of the Test Radio (representing +50 dBm = 100W). The spectrum analyzer was then adjusted to 10kHz span and 100Hz resolution bandwidth and the plot of occupied band was obtained. See Section 7.3.

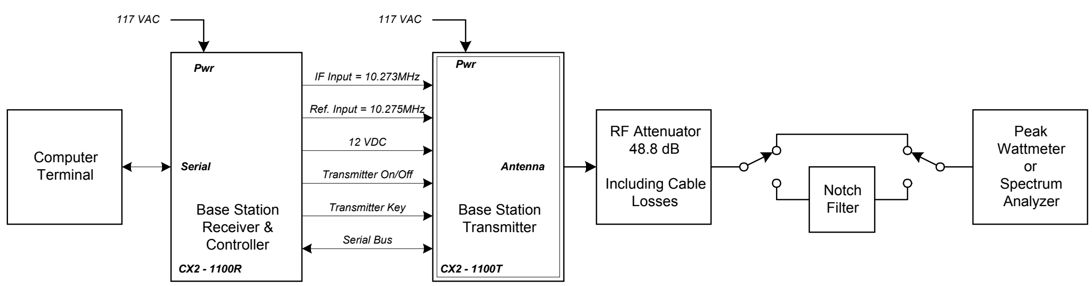


Figure 7.1 Test Setup Block Diagram

7.2 ***Modulation Characteristics §2.1047***

This test is not applicable. Application of external data does not affect the modulation level.

7.3 ***Occupied Bandwidth §2.1049***

Limit, §90.210(f)	Result
Emission Mask F	*Complies, see Fig. 7.2*

Emission Mask §90.210(e)(4):

The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide (usually two to three times the channel bandwidth) to capture the true peak emission of the equipment under test. In order to show compliance with the emission mask up to and including 50kHz removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100Hz with the measuring instrument in peak hold mode. A sufficient number of sweeps must be measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must not be less than the instrument resolution bandwidth. For emissions beyond 50kHz from the edge of the authorized bandwidth see paragraph (m) of this section. If it can be shown that the use of the above instrumentation settings do not accurately represent the true interference potential of the equipment under test, then an alternate procedure may be used provided prior Commission approval is obtained.

Emission Mask F §90.210(f):

For transmitters operating in the 220 - 222 MHz frequency band, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth f_0 to the edge of the authorized bandwidth f_e: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 2kHz up to and including 3.75kHz: ***30 + 20 (f_d - 2) dB or 55 + 10 log (P) dB or 65 dB, whichever is the lesser attenuation.***

(3) On any frequency beyond 3.75kHz removed from the center of the authorized bandwidth f_d : ***At least 55 + 10 log (P) dB***

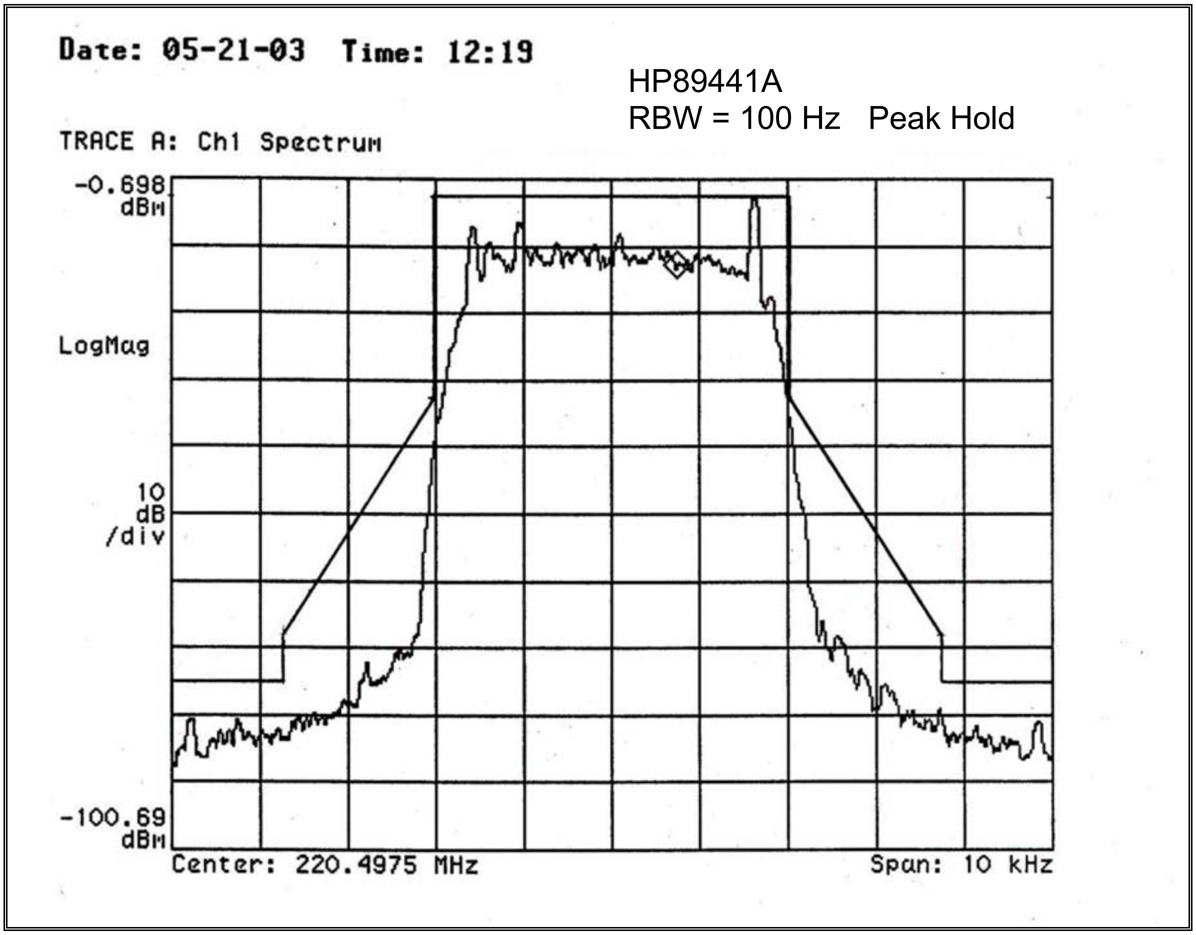


Figure 7.2 Occupied Bandwidth Plot plus Emission Mask F

<u>Procedure</u>:

The Test Radio was operated identically to the method used in the *RF Power Output §2.1046* test. The test setup is as shown in Figure 7.1 above, with the spectrum analyzer attached to the RF attenuator output. The reference level of the spectrum analyzer was set to the peak output power of the Test Radio, representing +50 dBm = 100W. The spectrum analyzer was then adjusted to 10kHz span and 100Hz resolution bandwidth and operated in peak hold mode as indicated by 90.210(e)(4). Transmission duration was sufficient to allow the emission profile to fully develop.

7.4 ***Spurious Emissions at Antenna Terminals §2.1051***

Limit, §90.210(f)(3)	Result
55 + 10 log (P) = 75 dB	*Complies, see attached plots*

No detectable spurious frequency emissions to report.

Spurious Emissions at Antenna Terminals §2.1051

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

TIA / EIA TSB78 2.2.13 Conducted Spurious Emissions

(e) Set the center frequency of the spectrum analyzer to the assigned transmitter frequency, key the transmitter, modulated with test signal B to the rated RF output level, and set the level of this signal to the full scale reference line. This is the 0 dB reference for the measurement.

(f) Adjust the spectrum analyzer for the widest span and a resolution bandwidth sufficiently narrow to result in a displayed noise floor 10 dB less than the specified spurious level limit.

(i) De-key the transmitter and insert the notch filter.

(j) Repeat step (e).

(k) Adjust the spectrum analyzer for the widest span and a resolution bandwidth sufficiently narrow to result in a noise floor 10 dB less than the lowest spurious to be measured.

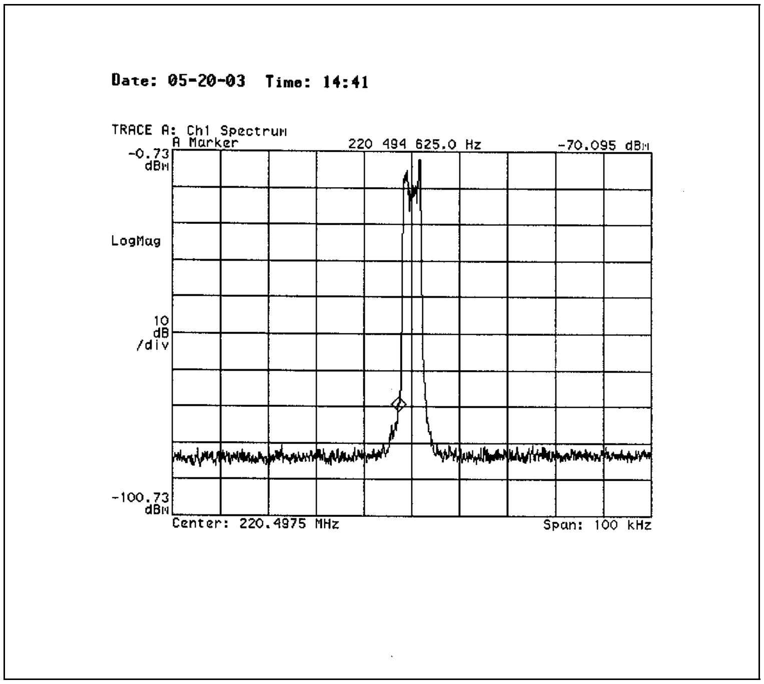


Figure 7.3 Conducted Spurious Emissions

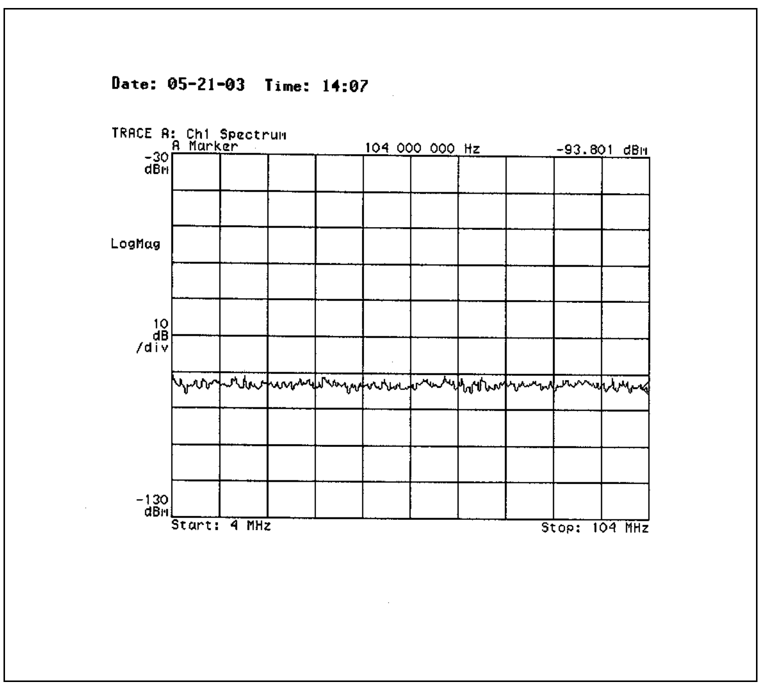


Figure 7.4 Conducted Spurious Emissions

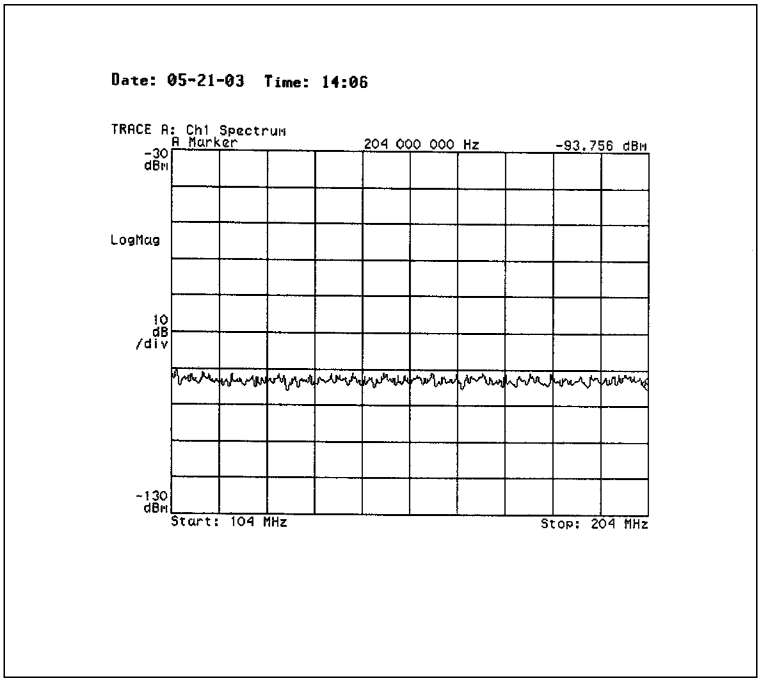


Figure 7.5 Conducted Spurious Emissions

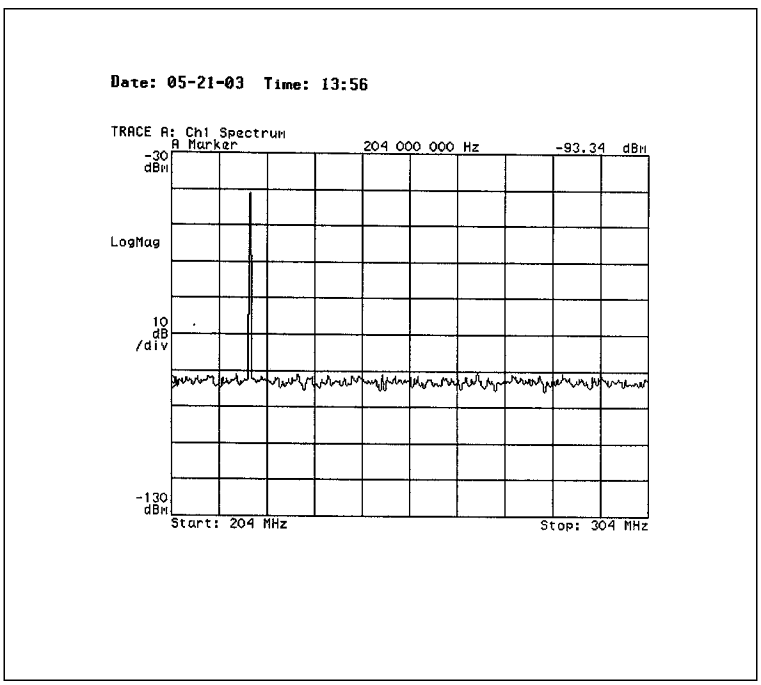


Figure 7.6 Conducted Spurious Emissions

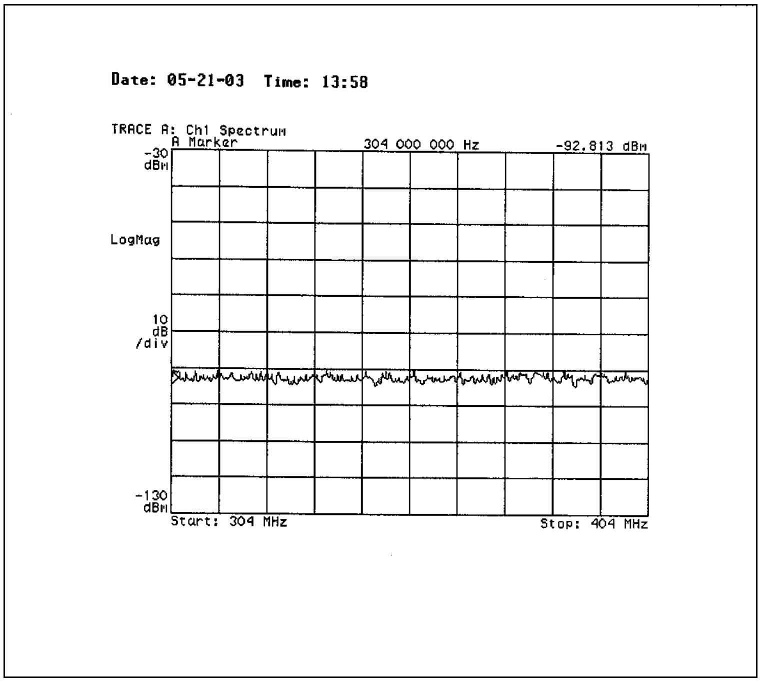


Figure 7.7 Conducted Spurious Emissions

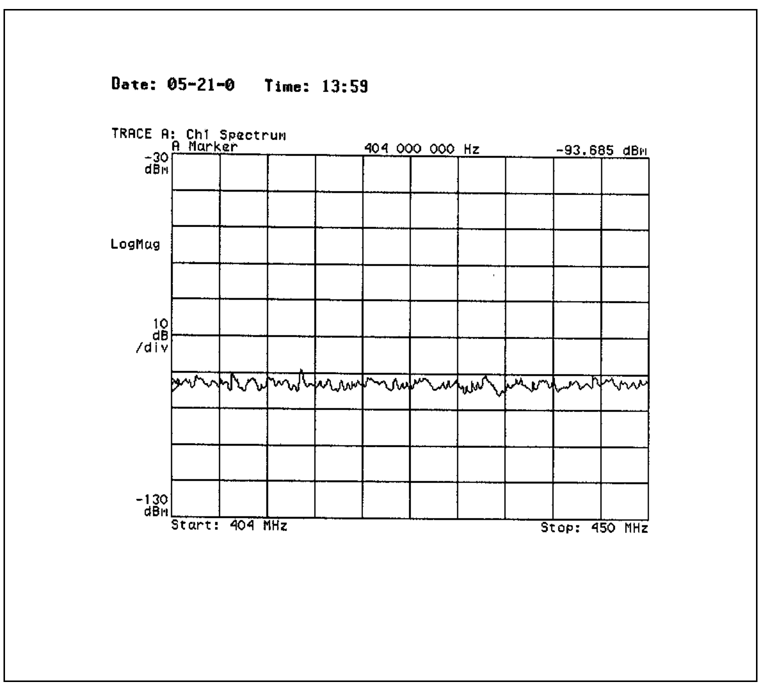


Figure 7.8 Conducted Spurious Emissions

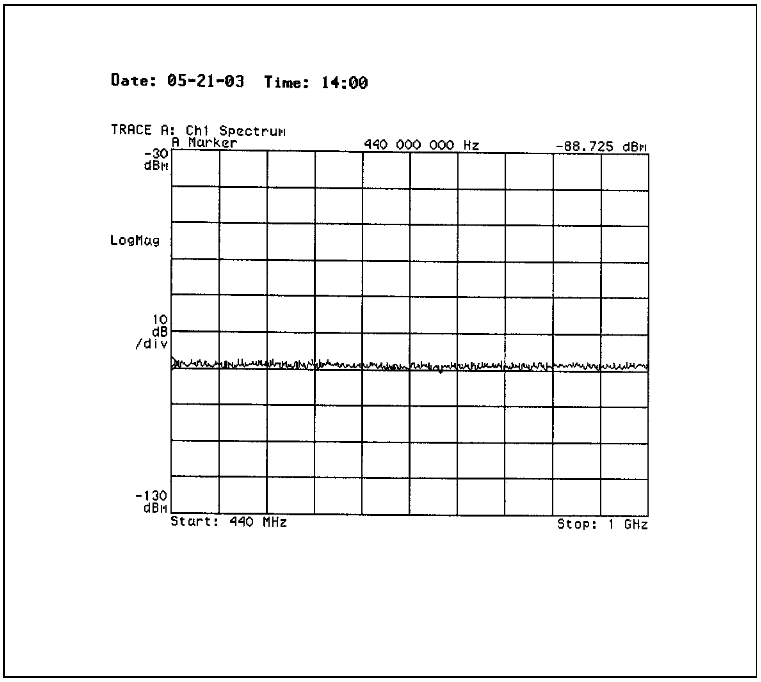


Figure 7.9 Conducted Spurious Emissions

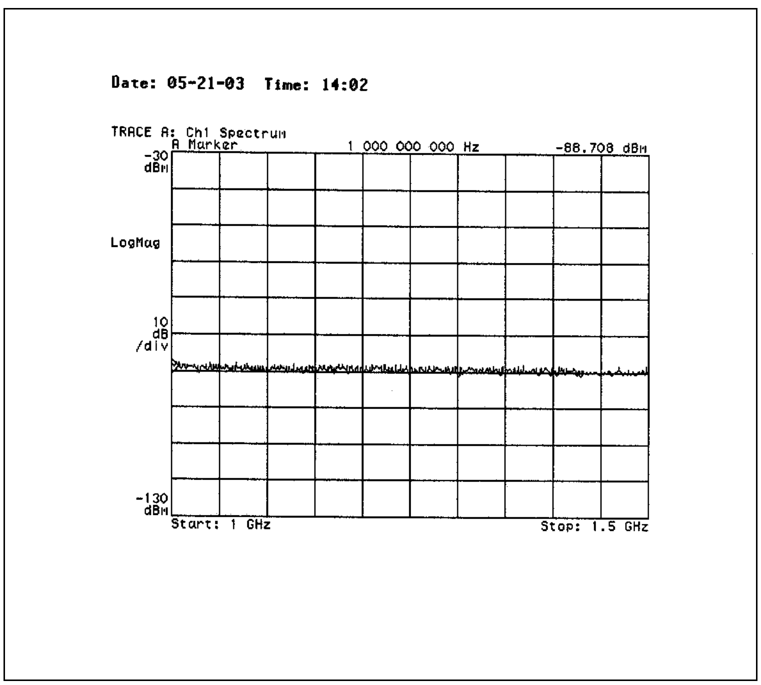


Figure 7.10 Conducted Spurious Emissions

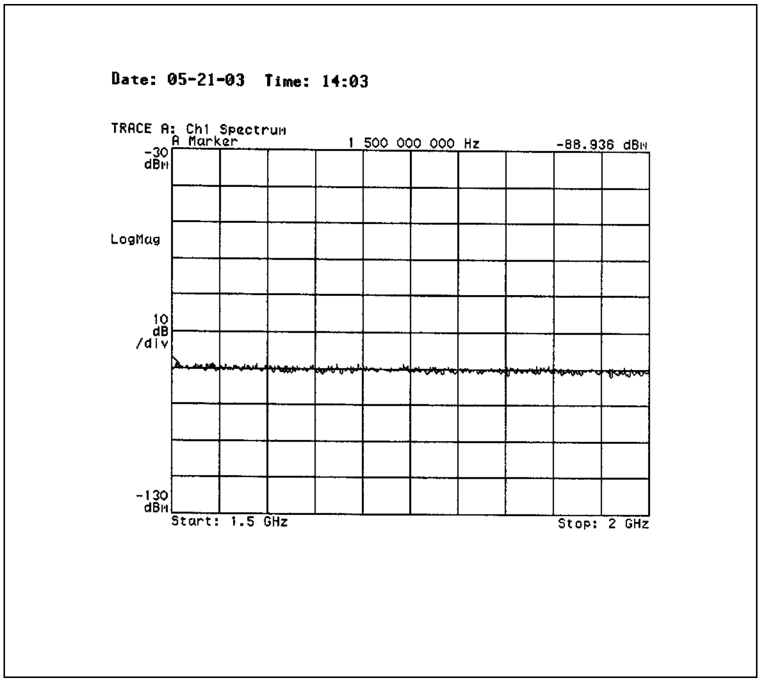


Figure 7.11 Conducted Spurious Emissions

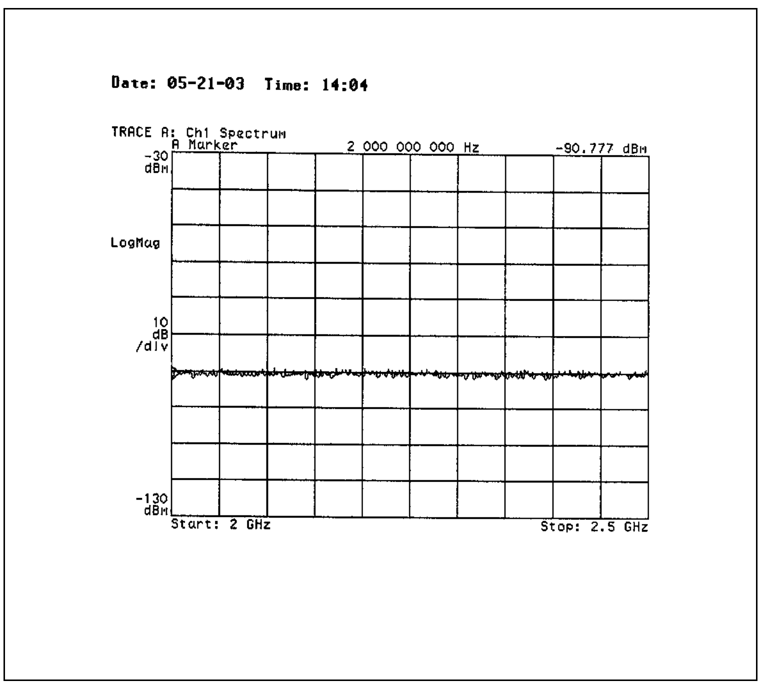


Figure 7.12 Conducted Spurious Emissions

Procedure:

The test setup was the same used in the Occupied Bandwidth Test, as shown in Figure 7.1 above, with the spectrum analyzer attached to the RF attenuator output. Spurious emissions, if any, must register 55 + 10 log (P) below the rated power of the device, 75 dB in this case. The frequency spectrum was searched from the lowest oscillator frequency to the transmitter's tenth harmonic. The tenth harmonic of the highest fundamental frequency generated within the Test Radio - 232MHz - is also included in the frequency spectrum studied.

The reference level of the spectrum analyzer was set to the peak output power of the Test Radio, representing +50 dBm = 100W. The spectral plot shown in Figure 7.3 was obtained.

A notch filter was later inserted between the RF attenuator and the spectrum analyzer to attenuate the fundamental output of the Test Radio, to allow for increased sensitivity and lower noise floor on the spectrum analyzer. After inserting the notch filter, the reference level on the spectrum analyzer was readjusted to -30 dBm to allow for adequate dynamic range to meet the requirements of the TIA/EIA TSB78, the span and resolution bandwidth were adjusted following the same guideline. The spectral plots shown in Figures 7.4 to 7.12 were obtained with the notch filter in place. Because of the attenuation offset, the -75 dBm levels on the spectral plots represent the specified maximum allowable spurious level.

7.5 ***Field Strength of Spurious Radiation §2.1053***

Limit, §90.210(f)(3)	Result
50 dBm - 75 dB = -25 dBm	*Complies, see Exhibit titled Spurious Radiation Test Data.*

Compliance is shown in a separate exhibit, Spurious Radiation Test Data, prepared during transmitter spurious radiation testing at Elite Electronic Engineering test facility.

Reference TIA/EIA TSB78 or TIA/EIA 603. At spurious output frequencies, the equivalent radiated power of the Test Radio must be less than that produced by a -25dBm signal source driving a substitute resonant half-wave dipole. The value -25dBm is based on the case P = 100 W or +50dBm and a 75dB spurious suppression.

Procedure:

Spurious radiation testing was carried out in accordance with ANSI C63.4 at Elite Electronic Engineering's FCC registered test site in Downers Grove, IL. The measured field strength of spurious radiation was converted back to an equivalent dipole radiated power (ERP) using the (worst case) free space path loss equation. This power was then converted to a power relative to the rated transmitter power (labeled Attenuation). The relative powers must be at least 75 dB below the rated power (labeled Minimum Attenuation).

7.6 ***Frequency Stability §2.1055***

7.6.1 Frequency Stability Vs. Temperature

Frequency Error Limit for Base Stations, §90.213(a)	Measured Peak Frequency Error vs. Temperature
+/- 0.1 ppm	*0.023, - 0.059 ppm (Complies, see data table and graph below).*

Frequency deviation within required limits. No measurable short-term transient effects on the transmitter frequency due to keying or heating element cycling.

Frequency Stability §2.1055

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From -30º to +50º centigrade for all equipment except that specified in subparagraphs *(2)* and *(3)* of this Paragraph.

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10º centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short time transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

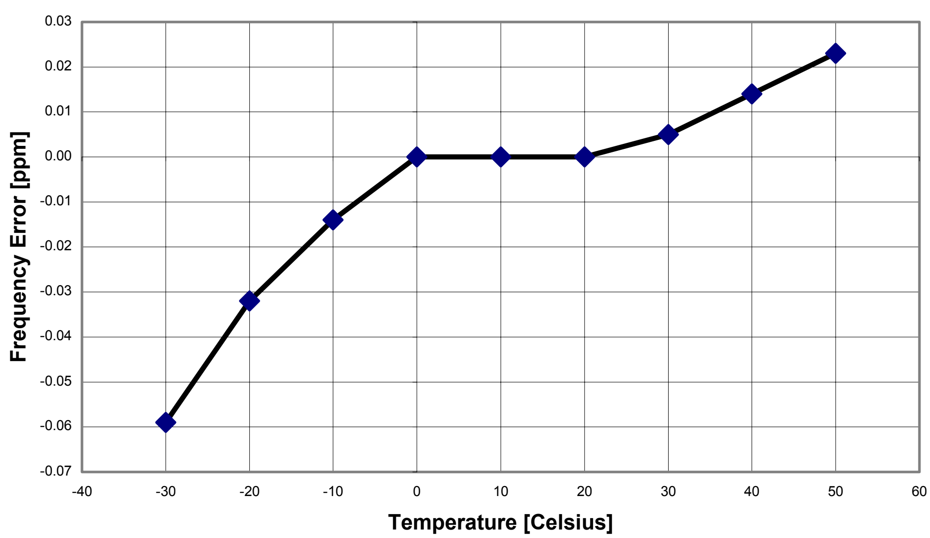
Frequency Stability §90.213

(a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

Minimum Frequency Stability Parts per million [ppm]	
Frequency Range [MHz]	Fixed and Base Stations
220 - 222	0.1

Temp. [Celsius]	Frequency Deviation [Hz]	Frequency Deviation [ppm]
-30	-13	-0.0590
-20	-7	-0.0320
-10	-3	-0.0140
0	0	0.0000
10	0	0.0000
20	0	0.0000
30	1	0.0050
40	3	0.0140
50	5	0.0230

Figure 7.13 Frequency Error vs. Temperature



Procedure:

This test was conducted in accordance with §2.1055(a)(1) and (b). The transmitter had been previously tuned up on channel 100 - 220.4975 MHz, in accordance with the Tune-up procedure. All frequency determining and stabilizing components were placed in the temperature test chamber and wired as shown in the test block diagram below. A 1605Hz test tone, internally generated by the Test Radio, was used for this test.

A high-resolution frequency counter was used to measure the frequency output of the Test Radio. The frequency counter reference is an external GPS-based frequency standard whose manufacturer states is accurate to < 1×10^{-12} when its status light is blinking at one pulse per second.

The temperature chamber was first stabilized at -30º C for an hour, and the temperature was then adjusted in 10º C steps to +50º C. At each temperature setting the chamber was allowed to stabilize for at least 45 minutes before measurements were taken. The computer terminal was used to control the transmitter key.

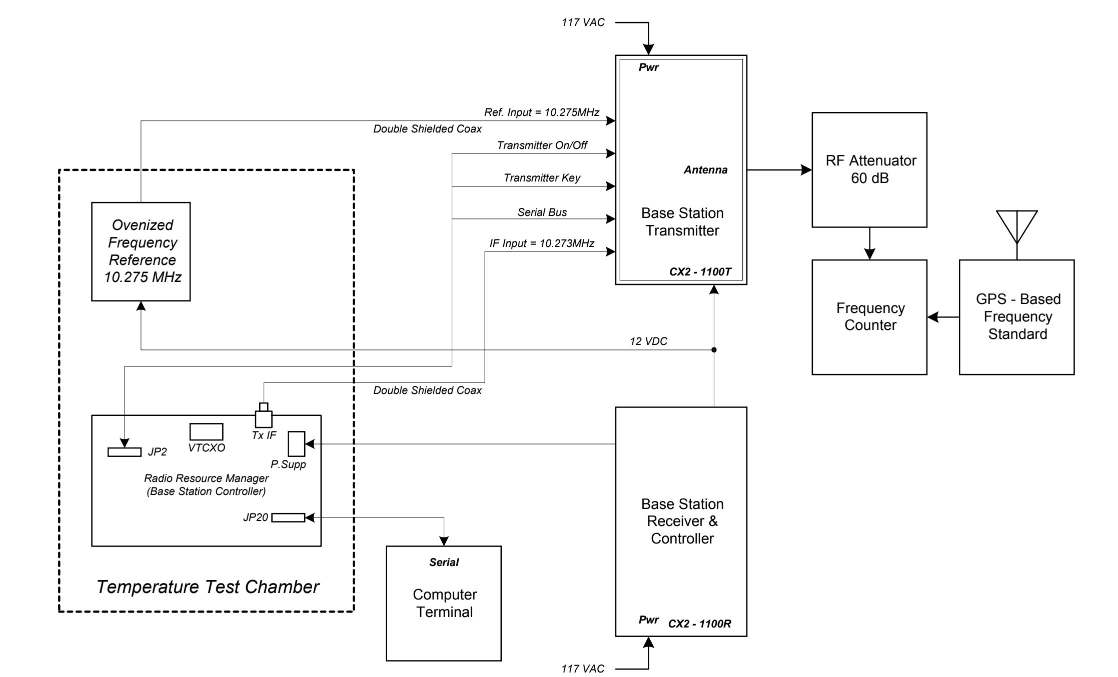


Figure 7.14 Test Setup Block Diagram

7.6.2 Frequency Stability Vs. Voltage

Frequency Error Limit for Base Stations, §90.213(a)	Measured Peak Frequency Error vs. Supply Voltage
+/- 0.1 ppm	*Complies, see data table below.*

No measurable frequency deviation throughout the test. No noticeable short-term transient effects on the transmitter frequency due to keying or heating element cycling.

Supply Voltage [VAC]	% of Rated	Frequency Change
117.00	100	0 (reference)
111.15	95	No change
105.30	90	No change
99.45	85	No change
122.85	105	No change
128.70	110	No change
134.55	115	No change

Procedure:

This test was conducted in accordance with §2.1055(d). The transmitter had been previously tuned up on channel 100 - 220.4975 MHz, in accordance with the Tune-up procedure. The Test Radio was connected as shown in the test block diagram below. A 1605Hz test tone, internally generated by the Test Radio, was used for this test.

A high-resolution frequency counter was used to measure the frequency output of the Test Radio. The frequency counter reference is an external GPS-based frequency standard whose manufacturer states is accurate to $< 1 \times 10^{-12}$ when its status light is blinking at one pulse per second.

The AC voltmeter was attached directly to the to the AC power strip powering the Test Radio. The supply voltage was initially set to the rated voltage, 117 VAC. The Test Radio was keyed and its output frequency at this voltage was recorded as the reference frequency. The supply voltage was the adjusted down 15% and then up 15% and the transmitter was keyed at each voltage. No measurable frequency change was noted. This can be explained by the fact that the 117 VAC line voltage feeds an internal regulated switching power supply, the output of which is further regulated by linear regulators before powering the frequency determining and stabilizing circuits.

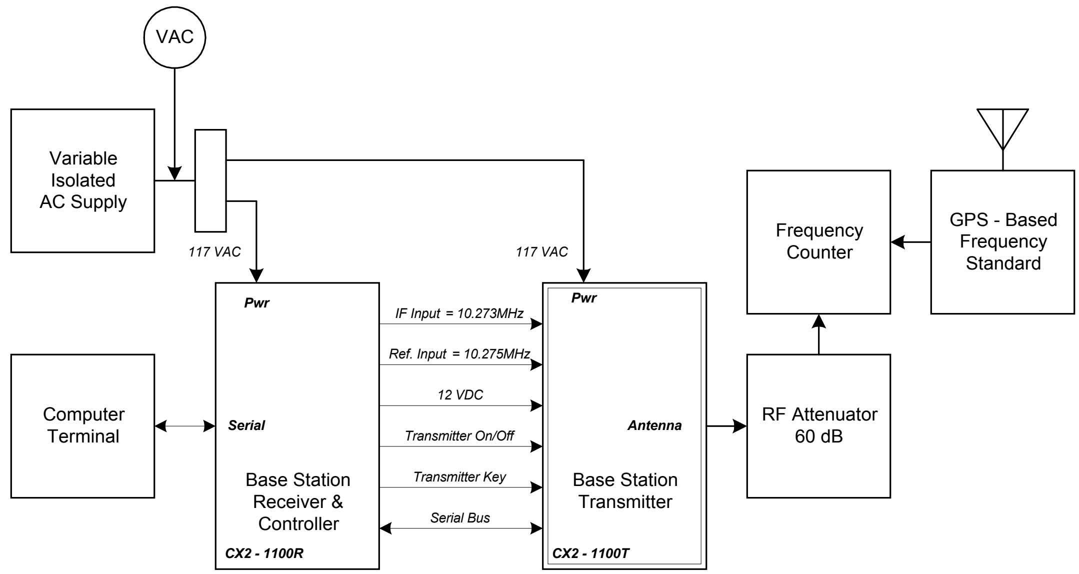


Figure 7.15 Test Setup Block Diagram

7.10 ***Statement of Test Supervisor §2.911(d)***

Date: June 23, 2003

The undersigned performed or supervised the performance of the technical tests reported in this application and attests that all procedures were conducted in accordance with good engineering practice and to the best of his knowledge all data reported is accurate.

The qualifications of the undersigned include the following:

- BSEE, Universidad Ricardo Palma (Lima, Peru), 1992.
- Twenty years of experience in different areas of the electronic industry, including - scientific and medical instrumentation, industrial instruments and controls, process automation and telecommunications.

Signed

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Claudio Alvizuri
Senior Staff Engineer
Base Station Project Manager
SOPHIA Communications, Inc. (CX2 Technologies)