(c) Part 2.993 requires that "information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from half-wave dipole antennas." Since the basic test data is in volts at the FSM input (50 ohms), the following relationship can be used:

$$P_r = \frac{P_t G_r G_t \lambda^2}{(4\pi R)^2}$$

(from "Reference Data for Radio Engineers", 6th ed., Howard W. Sams)

P_r = receiver power
P_t = transmitter power
G_r = rcvr antenna gain = 1.64 for dipole
G_t = xmtr " " " " "
λ = wavelength = 300/freq(Mhz)
R = distance between antennas, meters (9.1 meters for this test)

Solving for P_t:

$$P_t = \frac{P_r (4\pi R)^2}{G_r G_t \lambda^2} = (.054022) P_r f^2$$

(f in Mhz)

Sample calculations:

At 123.15 Mhz $P_r = \frac{V^2}{R} = \frac{(.6)^2}{50} = .012$ watts

$P_t = (.054022)(.012)(123.15)^2$

$= 16.3$ watts

At 246.3 Mhz $P_r = \frac{(62 \times 10^{-6})^2}{50} = 7.69 \times 10^{-11}$ watts

$P_t = (.054022)(7.69 \times 10^{-11})(246.3)^2$

$= 2.52 \times 10^{-7}$ watts

Then dB relative to 16.3 watts is

$10 \log \left(\frac{2.52 \times 10^{-7}}{16.3} \right) = -78.1$ dB