5. FIELD STRENGTH OF SPURIOUS RADIATION - Paragraphs [2.1053,90.209]

Measurements were made on the three-meter range maintained by Radiation Science Inc. to quantify spurious emission level that are radiated directly from the cabinet, control circuits, power leads and intermediate circuit elements under normal conditions of installation and operation. Particular attenuation was paid to harmonics of the carrier frequency as well as those frequencies removed from the carrier by multiples of the oscillator frequency. Data is submitted in Table 2 showing the magnitude of harmonics and other spurious emissions from 30 MHz through the 10th harmonic.

The test sample was placed on a non-conductive table one meter above the ground plane in order to determine the maximum level at each emission. Both horizontal and vertical site antenna polarizations were employed. The antenna was raised 1 to 4 meters in height and the equipment under test was rotated 360 degrees to minimize the emission.

The reference level for spurious radiation was taken as a ideal dipole excited by the measured output power according to the following relationship:

E = (49.2 P) 1/2 / R

Where: E = electric-field intensity in Volts/meter
P = transmitted power in Watts
R = distance in meters

For this case: E = 1.17 V/M = 124.4 dBu/m. The permissible value of spurious emissions is equal to or less than 124.4 dBu/m - (50 + 10log(2) = 83.4 dBu/m.

Any observed spurious emissions not reported were more than 20 db below the permitted level.

TABLE 2
FIELD STRENGTH OF RADIATED EMISSION

EMISSION FREQUENCY MHz	ANTENNA POLARITY (H,V)	EMISSION LEVEL dbuv	ANTENNA FACTOR dB	FIELD STRENGTH @3m dbuv	EMISSION LEVEL Dbc	FCC LIMIT Dbc
163.91	V	97.0	14.6	111.6	Reference	
327.83	V	22.0	17.0	39.0	72.6	53
655.65	V	16.0	23.0	39.0	72.6	53
819.56	V	12.0	26.0	38.0	73.6	53
1147.0	V	11.0	30.0	41.0	70.6	53
163.91	H	91.0	14.6	105.6	Reference	
327.83	H	26.0	17.0	43.0	62.6	53
655.65	H	17.0	23.0	40.0	65.6	53
819.56	H	15.0	26.0	41.0	64.6	53
1147.0	H	9.0	30.0	39.0	66.6	53

Radiation Science Inc made table 2 measurements.

They calculated them out for Part 15 not Part [90.209]. The above measurements were copied from their test result paper and calculated for Part [90.209(c)(3).

The data from Table 2 verifies that the test sample complies with Paragraph 90.209(c)(3).

The results from Table 2 above were compared to Radiation Science's Test Site Standards as supplied via Figure 4, Figure 5, Data Sheet 1, and Data Sheet 2 in the PDF exhibit "RSITestSite.pdf". Table 2B below represents the Test Site Standards substituted to reproduce the same field strength levels @ 3 meters (ANSI/TIA/EIA-603-1992).

Table 2B

VERTICAL

MHZ	Test Site Pwr DBm	DBc	FCC Limit 50 + 10 log(2)
163.91	+31.7 DBm	Reference	
327.83	-47.1 DBm	79.8 DBc	53
655.65	-47.9 DBm	79.6 DBc	53
819.56		>80 DBc	53
1147.0		>80 DBc	53

HORIZONTAL

MHZ	Test Site Pwr DBm	DBc	FCC Limit 50 + 10 log(2)
163.91	+29.6 DBm	Reference	
327.83	-40.4 DBm	70.0 DBc	53
655.65	-45.0 DBm	74.6 DBc	53
819.56		>80 DBc	53
1147.0		>80 DBc	53