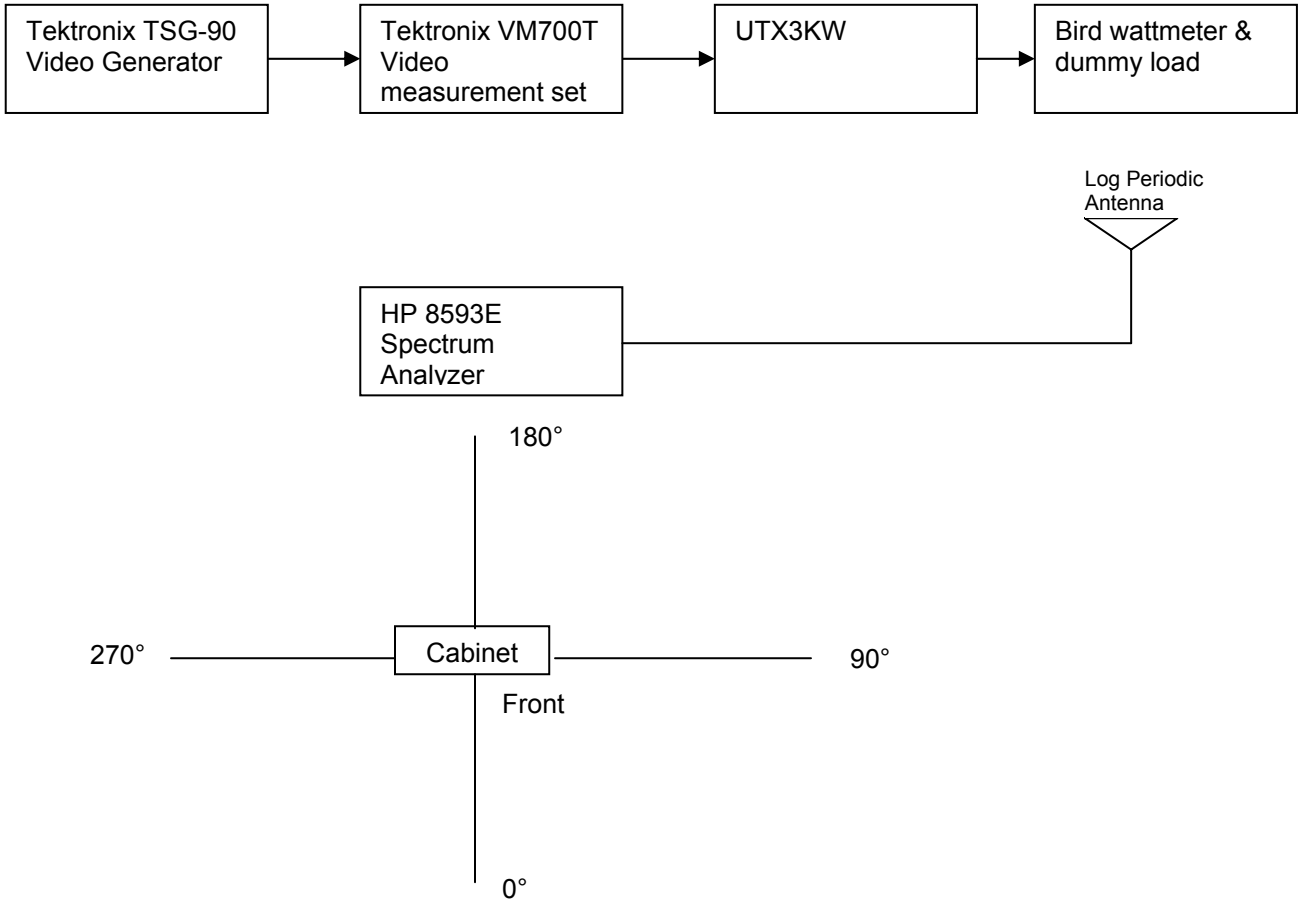
CABINET RADIATION

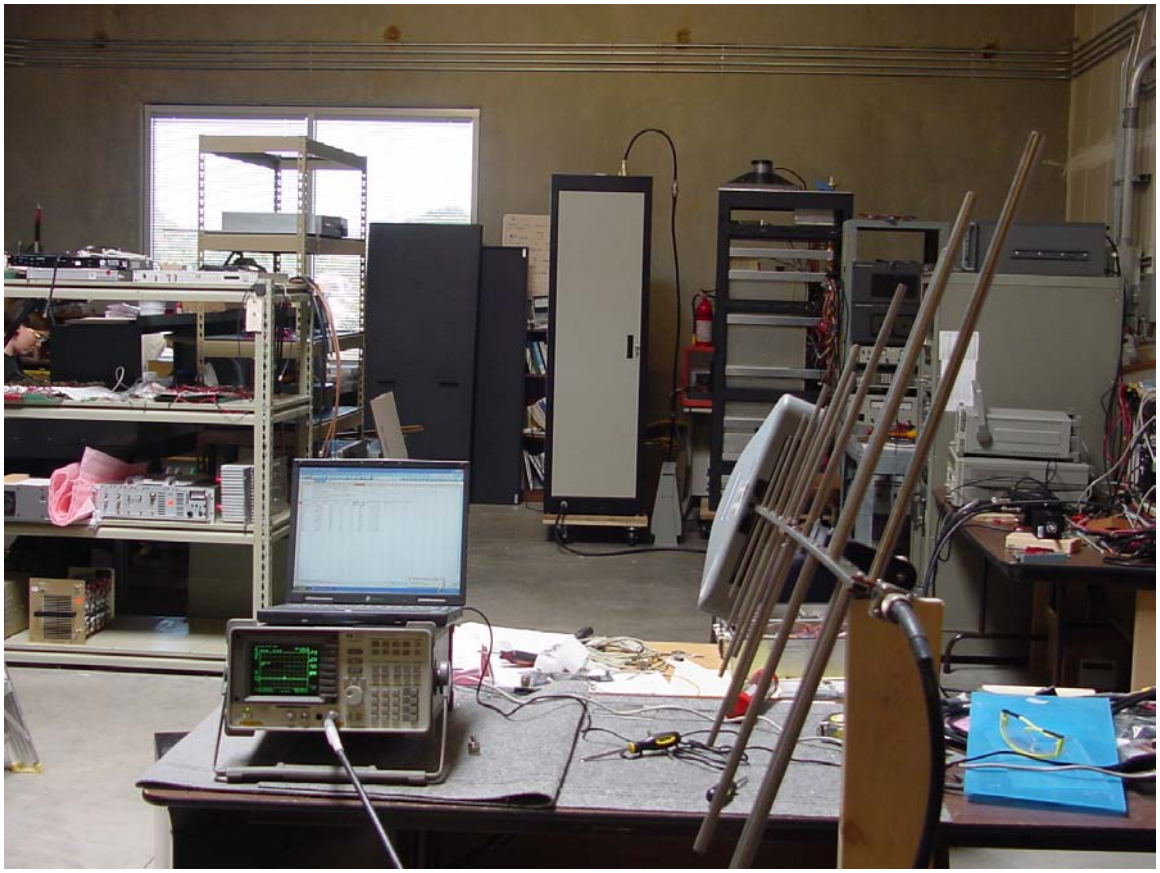
The transmitter and test equipment were configured as shown below including the angles of measurement with respect to the transmitter cabinet. The photo on the subsequent page also shows the physical set-up of the test equipment and equipment under test. The transmitter was operated at 1.0 kW peak sync power with a 10 dB visual/aural ratio with the video input signal being a sync signal and 50 IRE “set-up” level. The free space path loss, cable loss, and antenna gain characteristics were obtained at the fundamental frequency and at each of the harmonics of the visual carrier frequency in order to accurately assess the level of the signal radiated from the cabinet. Radiation from the cabinet was measured at a distance of 30 feet in 4 different physical rotation angles: 0, 90, 180, and 270 degrees (0 degrees being the front of the cabinet). The values are tabulated in the table on the next page following the photos.

TEST EQUIPMENT CONFIGURATION



PHYSICAL CABINET RADIATION TEST CONFIGURATION

This photograph shows the actual laboratory environment in which the cabinet radiation tests were conducted. The log periodic antenna, cable and spectrum analyzer is shown in the foreground and the UTX1KW is shown in the background. The transmitter was rotated 90 degrees for each of the measurement orientations.



As indicated in the spreadsheet data on the following page, the worst case measurement was 83 dB at the second harmonic. The measurement tables for the remaining views of the transmitter are shown below. The noise floor of the measurement equipment was -88 dB referenced to the visual sync peak power and this level was recorded for frequency components that were less than or equal to -88 dB.

CABINET RADIATION DATA

CABINET RADIATION SPREADSHEET
UTX-1KW Front View
1 kW = 60 dBm
Corrected level must be less than 0 dBm
Distance is 30 feet

Harmonic	Frequency MHz	Measured Level	Cable Loss	Antenna Gain	Path Loss	Corrected Level	Required Level	Comparison to transmit level dB
Xmit freq.	549.25	-49	0.4	5.7	46.5	-7.8	0 dBm	67.8
2nd	1098.5	-71	0.8	6.5	52.5	-24.2	0 dBm	84.2
3rd	1647.75	-85	1.2	7	56.1	-34.7	0 dBm	94.7
4th	2197	-85	1.6	5.7	58.6	-30.5	0 dBm	90.5
5th	2746.25	-88	1.7	4	60.5	-29.8	0 dBm	89.8
6th	3295.5	-88	1.8	4.2	62.1	-28.3	0 dBm	88.3
7th	3844.75	-88	1.9	3.7	63.4	-26.4	0 dBm	86.4
8th	4394	-88	2	3	64.6	-24.4	0 dBm	84.4
9th	4943.25	-88	2.8	2	65.6	-21.6	0 dBm	81.6
10th	5492.5	-88	3.2	2.5	66.5	-20.8	0 dBm	80.8

CABINET RADIATION SPREADSHEET
UTX-1KW Left side View
1 kW = 60 dBm
Corrected level must be less than 0 dBm
Distance is 30 feet

Harmonic	Frequency MHz	Measured Level	Cable Loss	Antenna Gain	Path Loss	Corrected Level	Required Level	Comparison to transmit level dB
Xmit freq.	549.25	-57	0.4	5.7	46.5	-15.8	0 dBm	75.8
2nd	1098.5	-70	0.8	6.5	52.5	-23.2	0 dBm	83.2
3rd	1647.75	-88	1.2	7	56.1	-37.7	0 dBm	97.7
4th	2197	-88	1.6	5.7	58.6	-33.5	0 dBm	93.5
5th	2746.25	-88	1.7	4	60.5	-29.8	0 dBm	89.8
6th	3295.5	-88	1.8	4.2	62.1	-28.3	0 dBm	88.3
7th	3844.75	-88	1.9	3.7	63.4	-26.4	0 dBm	86.4
8th	4394	-88	2	3	64.6	-24.4	0 dBm	84.4
9th	4943.25	-88	2.8	2	65.6	-21.6	0 dBm	81.6
10th	5492.5	-88	3.2	2.5	66.5	-20.8	0 dBm	80.8

CABINET RADIATION SPREADSHEET
UTX-1KW Rightside View
1 kW = 60 dBm
Corrected level must be less than 0 dBm
Distance is 30 feet

Harmonic	Frequency MHz	Measured Level	Cable Loss	Antenna Gain	Path Loss	Corrected Level	Required Level	Comparison to transmit level dB
Xmit freq.	549.25	-52	0.4	5.7	46.5	-10.8	0 dBm	70.8
2nd	1098.5	-70	0.8	6.5	52.5	-23.2	0 dBm	83.2
3rd	1647.75	-88	1.2	7	56.1	-37.7	0 dBm	97.7
4th	2197	-88	1.6	5.7	58.6	-33.5	0 dBm	93.5
5th	2746.25	-88	1.7	4	60.5	-29.8	0 dBm	89.8
6th	3295.5	-88	1.8	4.2	62.1	-28.3	0 dBm	88.3
7th	3844.75	-88	1.9	3.7	63.4	-26.4	0 dBm	86.4
8th	4394	-88	2	3	64.6	-24.4	0 dBm	84.4
9th	4943.25	-88	2.8	2	65.6	-21.6	0 dBm	81.6
10th	5492.5	-88	3.2	2.5	66.5	-20.8	0 dBm	80.8

CABINET RADIATION SPREADSHEET
UTX-1KW Back side View
1 kW = 60 dBm
Corrected level must be less than 0 dBm
Distance is 30 feet

Harmonic	Frequency MHz	Measured Level	Cable Loss	Antenna Gain	Path Loss	Corrected Level	Required Level	Comparison to transmit level dB
Xmit freq.	549.25	-48	0.4	5.7	46.5	-6.8	0 dBm	66.8
2nd	1098.5	-72	0.8	6.5	52.5	-25.2	0 dBm	85.2
3rd	1647.75	-88	1.2	7	56.1	-37.7	0 dBm	97.7
4th	2197	-88	1.6	5.7	58.6	-33.5	0 dBm	93.5
5th	2746.25	-88	1.7	4	60.5	-29.8	0 dBm	89.8
6th	3295.5	-88	1.8	4.2	62.1	-28.3	0 dBm	88.3
7th	3844.75	-88	1.9	3.7	63.4	-26.4	0 dBm	86.4
8th	4394	-88	2	3	64.6	-24.4	0 dBm	84.4
9th	4943.25	-88	2.8	2	65.6	-21.6	0 dBm	81.6
10th	5492.5	-88	3.2	2.5	66.5	-20.8	0 dBm	80.8

VOLTAGES AND CURRENTS TO FINAL AMPLIFIERS

Final amplifier DC voltage and current measurements were made with the transmitter operating at 1.0 kW power output and at 100 W output power. A video input signal of sync and 0 IRE “setup” level was used. Voltage measurements were made using a Fluke 77 meter. Current measurements were made using the same meter with a measurement across a DC shunt for each of the power amplifiers operating in parallel. The shunt resistance value is 1 milliohm. The power supply voltage was 31.0 volts for each measurement. The DC current values were summed to get the total DC current at both operating points of 1.0 kW and 100 W.

Peak Output Power = 1000 Watts
Voltage = 31.0 volts
Total DC Current = 92 amps
Final amplifier DC power input = 31 x 92 = 2852 watts

Peak Output Power = 100 Watts
Voltage = 31.0 volts
Total DC Current = 34 amps
Final amplifier DC power input = 31 x 34 = 1054 watts

EQUIPMENT LIST

The following test equipment was used in the various test equipment configurations or to create calibration of equipment at various frequencies. All equipment was known to be in good working order and the supplier of the equipment stipulated the equipment was within the calibration period.

EQUIPMENT MODEL	SERIAL NUMBER
Tektronix 1410 Video generator	B020216
Modulation Sciences MSI320 demodulator	390128364
HP 8595E Spectrum Analyzer	3523A01399
VM-700T Video Analyzer	B010396
HP 3525A Signal Generator	2846A01312
HP 200 CD Audio Generator	0960A86012
Tektronix TSG90 Video signal generator	B022622
Tektronix 1750 Waveform Monitor	B033351
ETS 3147 Log Periodic Antenna	9703-1288
Fluke 77 meter	54810424
Wavetek 8003 Scalar Analyzer	1813961
HP 54601 Oscilloscope	3134A02137
Bird 6801-220 wattmeter	4978
Bird 8890-300 Dummy load	4778
HP 8903B Modulation Monitor	2920A02167
HP 53181 Frequency Counter	3736A05957