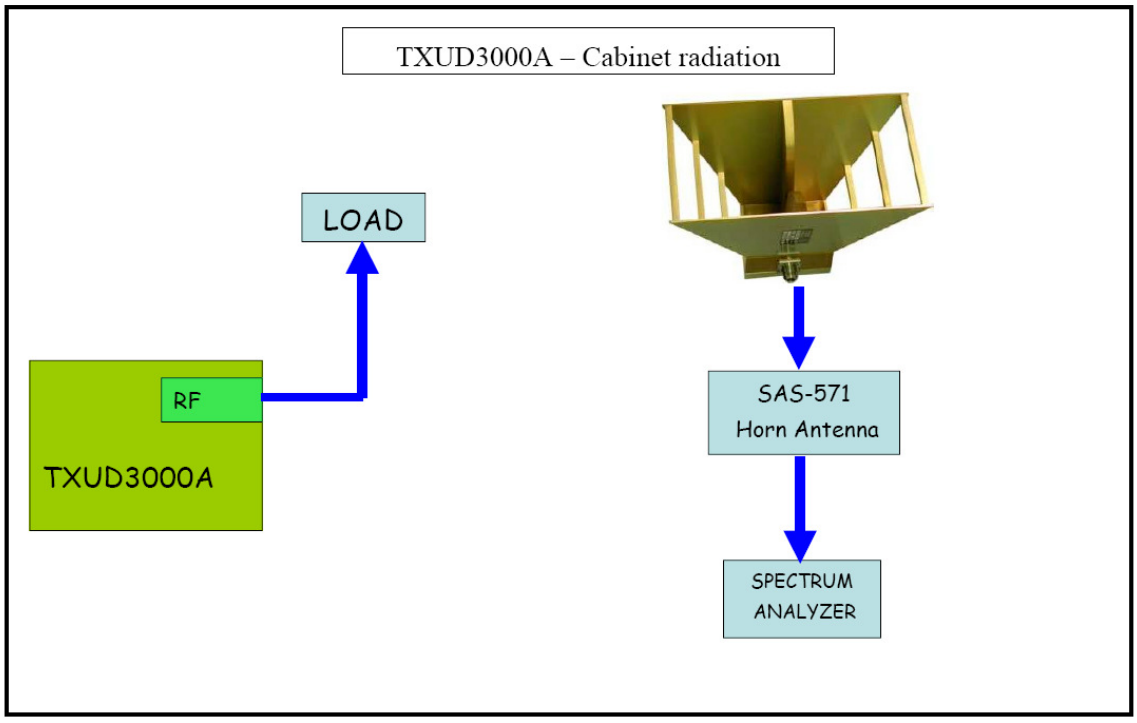
Cabinet Radiation

The transmitter and test equipment were configured as shown below including the angles of measurement with respect to the transmitter cabinet. Since the transmitter was in the same proximity to the on-channel signal from the existing channel 31 transmitter, it was impossible to distinguish the signal from the on-air transmitter from the TXUD3000A transmitter. For that reason, the TXUD3000A transmitter was operated channel 34 at 3000W average power into a load and cabinet radiation measurements were taken at that channel. 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 center frequency of channel 34 (center frequency of 593 MHz) 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) by rotating the transmitter. All spectral components above the noise floor (approximately -93 dBm in a 500 kHz bandwidth) referenced to average power radiated from the cabinet were recorded. The values are tabulated in the table on the next pages following the test equipment configuration drawing.



ATSC XMTR CABINET RADIATION SPREADSHEET

EUT: TXUD3000A

Description: 3kW UHF ATSC Transmitter

TX Frequency (MHz): 593

Output Power (Wrms): 3000 dBm value: 64.8 dBm

Corrected level must be less than: 4.8 dBm

Distance (m): 10

Front View

Harmonic	Frequency	Measured	Cable	Antenna	Path	Corrected	Required	Status
	MHz	Level	Loss	Gain	Loss	Level	Level	Pass/Fail
Xmit freq.	593	-48.1	0.8	7	47.9	-6.4	4.8	N/A
2nd	1186	-74.2	1.2	8.1	53.9	-27.2	4.8	Pass
3rd	1779	-77.0	1.6	10.7	57.4	-28.7	4.8	Pass
4th	2372	-73.4	2.1	10.4	59.9	-21.8	4.8	Pass
5th	2965	-79.2	2.4	10.6	61.8	-25.6	4.8	Pass
6th	3558	-80.1	2.7	11.6	63.4	-25.6	4.8	Pass
7th	4151	-82.5	3.1	10.7	64.8	-25.3	4.8	Pass
8th	4744	-84.0	3.6	10.9	65.9	-25.4	4.8	Pass
9th	5337	-87.6	4.3	11.7	66.9	-28.1	4.8	Pass
10th	5930	-92.0	4.8	12.2	67.9	-31.5	4.8	Pass

NOTES:

Antenna A.H. Systems SAS-571 S/N 2630 Horn Antenna, 700MHz-18GHz
CAL 09/02/2010

CHASE CBL6111C S/N 2630 Bilog Antenna, 30MHz-1GHz CAL 11/01/2010

Spectrum Analyzer — Rohde & Schwarz FSP Spectrum Analyzer, 9kHz - 30GHz
S/N 1093.4495.30

Cable — RG213, 2,12 meters length

Load — BIRD 8251 S/N 5845

TX Frequency (MHz): 593 — Left View

Output Power (Wrms): 3000 dBm value: 64.8 dBm

Corrected level must be less than: 4.8 dBm

Distance (m): 10

Harmonic	Frequency MHz	Measured Level	Cable Loss	Antenna Gain	Path Loss	Corrected Level	Required Level	Status Pass/Fail
Xmit freq.	593	-46.0	0.8	7	47.9	-4.3	4.8	N/A
2nd	1186	-75.3	1.2	8.1	53.9	-28.3	4.8	Pass
3rd	1779	-77.0	1.6	10.7	57.4	-28.7	4.8	Pass
4th	2372	-76.8	2.1	10.4	59.9	-25.2	4.8	Pass
5th	2965	-75.8	2.4	10.6	61.8	-22.2	4.8	Pass
6th	3558	-79.0	2.7	11.6	63.4	-24.5	4.8	Pass
7th	4151	-82.5	3.1	10.7	64.8	-25.3	4.8	Pass
8th	4744	-83.8	3.6	10.9	65.9	-25.2	4.8	Pass
9th	5337	-86.7	4.3	11.7	66.9	-27.2	4.8	Pass
10th	5930	-93.0	4.8	12.2	67.9	-32.5	4.8	Pass

TX Frequency (MHz): 593

Right View

Output Power (Wrms): 3000 dBm value: 64.8 dBm

Corrected level must be less than: 4.8 dBm

Distance (m): 10

Harmonic	Frequency	Measured	Cable	Antenna	Path	Corrected	Required	Status
	MHz	Level	Loss	Gain	Loss	Level	Level	Pass/Fail
Xmit freq.	593	-49.0	0.8	7	47.9	-7.3	4.8	N/A
2nd	1186	-72.1	1.2	8.1	53.9	-25.1	4.8	Pass
3rd	1779	-73.0	1.6	10.7	57.4	-24.7	4.8	Pass
4th	2372	-74.5	2.1	10.4	59.9	-22.9	4.8	Pass
5th	2965	-77.0	2.4	10.6	61.8	-23.4	4.8	Pass
6th	3558	-79.6	2.7	11.6	63.4	-25.1	4.8	Pass
7th	4151	-81.0	3.1	10.7	64.8	-23.8	4.8	Pass
8th	4744	-85.1	3.6	10.9	65.9	-26.5	4.8	Pass
9th	5337	-87.0	4.3	11.7	66.9	-27.5	4.8	Pass
10th	5930	-93.0	4.8	12.2	67.9	-32.5	4.8	Pass

TX Frequency (MHz):	593			Rear View
Output Power (Wrms):	3000	dBm value:	64.8	dBm
Corrected level must be less than:			4.8	dBm
Distance (m):	10			

Harmonic	Frequency	Measured	Cable	Antenna	Path	Corrected	Required	Status
	MHz	Level	Loss	Gain	Loss	Level	Level	Pass/Fail
Xmit freq.	593	-47.0	0.8	7	47.9	-5.3	4.8	N/A
2nd	1186	-69.5	1.2	8.1	53.9	-22.5	4.8	Pass
3rd	1779	-73.0	1.6	10.7	57.4	-24.7	4.8	Pass
4th	2372	-72.0	2.1	10.4	59.9	-20.4	4.8	Pass
5th	2965	-75.3	2.4	10.6	61.8	-21.7	4.8	Pass
6th	3558	-81.3	2.7	11.6	63.4	-26.8	4.8	Pass
7th	4151	-82.6	3.1	10.7	64.8	-25.4	4.8	Pass
8th	4744	-84.6	3.6	10.9	65.9	-26.0	4.8	Pass
9th	5337	-88.5	4.3	11.7	66.9	-29.0	4.8	Pass
10th	5930	-93.0	4.8	12.2	67.9	-32.5	4.8	Pass

As calculated from the spreadsheet data on the following page, the worst case measurement was 85.2 dB at the 4th harmonic.