



RF Safety Analysis

**AON Center
Chicago, IL**

**Prepared for:
Hubbard Radio Chicago**

Test Date 3/8/15

Report Date 3/18/15

Scope of Work:

Determine if transmitting antenna, ERI 1083-3CP causes any safety issues from RF Radiation in and around the rooftop areas.

Process:

Alive Telecommunications performed a Radio-Frequency (RF) safety analysis of the Rooftop, and Monopole area. The nature of the measurement is to evaluate and test the area for irregular or high amounts of RF energy which would be considered unsafe.

The standard used to measure compliance included the Federal Communications Commission (FCC) Office of Engineering (OET) Bulletin 65 titled, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields"

Tests were performed using the general population standard which is more stringent.

Follow FCC OET 65 guidelines and methodology for measuring power density levels keeping in mind the required safety factors. At each test location record four data points in the X, Y and Z axis to create a spatial and time average.

Tests were conducted using the Narda SRM 3000 Safety Test Solution. The equipment used was calibrated by the manufacture 10 months prior to the test date.

Assumptions:

Station is operating on their main antenna at normal levels during the test
WDRV 8.3 kW ERP analog per polarization 296 W Digital
WILV 6.9 kW ERP analog

Equipment:

Frequency Selective Safety Meter
Narda SRM 3000 S/N C-0022

3 Axis E-Field Probe Antenna 75 – 3000 MHz
Narda 3501/01 S/N C-0012

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**(A) Limits for Occupational/Controlled Exposure**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

NOTE 1: *Occupational/controlled* limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: *General population/uncontrolled* exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

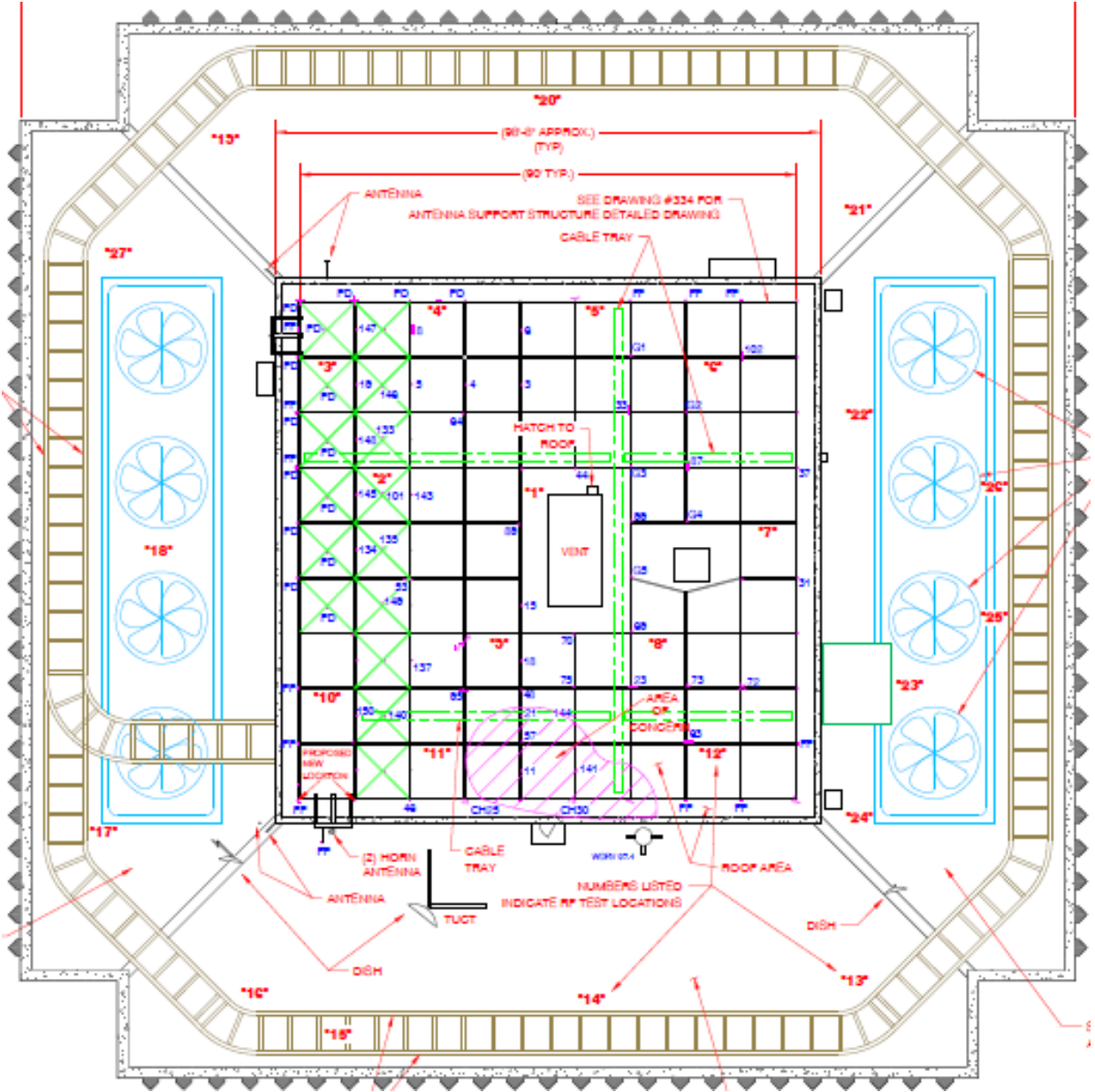
Results:

After reviewing data, the penthouse areas are below 90% of the allowable limit in all areas under the general public standard. The lower roof is all below 36% the GP Standard. The rooftop is considered safe under normal operation and properly marked with signage. The data included shows the test points and relating percentage at each point. Also attached is the FCC OET 65 breakdown for the Maximum Permissible Limits (MPE)

The building has an excellent protocol in place to limit contractors' access to the rooftop.

All data measured and interpretations thereof presented herein by Dan Barton, of Alive Telecommunications. All information present in this report is done so using the best of my abilities and utilization of equipment at the time it was taken. Alive Telecommunications takes on no responsibilities or liabilities in any form due to damage or injury resulting from a lack of knowledge and/or experience, or failure to observe safety guidelines on the part of the customer or any person acting on their own behalf.

Test Locations









Index	Ladder Up to Penthouse
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	6.460100174

Index	Hatch
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	34.10599899

Index	1
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	41.84700012

Index	2
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	22.47100067

Index	3
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	28.53199959

Index	4
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	29.26600075

Index	5
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	27.86300087

Index	6
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	39.76200104

Index	7
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	43.53499985

Index	8
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	65.22599792

Index	9
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	83.08899689

Index	10
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	61.97999954

Index	11
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	77.4260025

Index	Base of MonoPole Penthouse
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	89.36000061

Index	12
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	60.12200165

Index	Base of MonoPole Rooftop
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	35.91699982

Index	13
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	14.69999981

Index	14
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	22.96699905

Index	15
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	20.14500046

Index	16
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	4.622499943

Index	17
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	5.367000103

Index	18
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	5.423799992

Index	19
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	5.436100006

Index	20
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	3.677999973

Index	21
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	3.855600119

Index	22
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	3.971600056

Index	23
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	5.087900162

Index	24
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	4.03000021

Index	25
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	9.317299843

Index	26
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	6.164999962

Index	27
Date	3/8/2015
Unit	%
Result Type	MAX_AVG
Average Type	NUMBER
Average Time [s]	360
Number of Averages	4
Display	DETAIL
Axis	RSS
Standard Name	FCC GP
Service Table Name	FCC STD
Device Serial No.	C-0022
Antenna Name	3AX 75M-3G
Antenna Serial No.	C-0012
Total Value [%]	5.417999268