TS-ATC-031-130506

HPC Wireless Services
22 Shelter Rock Lane.
Building C
Danbury, CT, 06810
P.: 203.797.1112

HPC WIRELESS SERVICES

ORIGINAL

May 2, 2013

VIA UPS

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Melanie Bachman, Acting Executive Director

Re: Tower Share Request - American Tower Corporation and
Department of Homeland Security, Immigration and Customs Enforcement
Mohawk Mountain Road, Cornwall, Connecticut

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes §16-50aa, as amended, and on behalf of American Tower Corporation ("ATC") and the Department of Homeland Security, Immigrations and Customs Enforcement ("ICE"), this letter and associated documentation are submitted as a request for an order from the Connecticut Siting Council ("Council") to approve the proposed shared use by ICE of a tower on Mohawk Mountain Road in Cornwall, Connecticut (coordinates 41°-49'-17", 73°-17'-50"). The tower is owned by ATC and currently supports antennas of multiple carriers. ICE is seeking authorization to utilize the existing tower in connection as part of a multi-site plan to improve its regional communications capability in the Northeast.

As shown on drawings attached hereto, ICE proposes to install one yagi antenna on the tower with a mounting height of approximately 62'. The antenna is approximately 6' long, and therefore will extend to approximately the 68' level on the 75' tower. ICE's related equipment will be placed in an existing shared equipment building.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use." Based on the following, ICE requests that the Council find that the proposed shared use of the tower satisfies the criteria stated in Connecticut General Statutes § 16-50aa and issue an order approving the proposed use.

A. **Technical Feasibility.** Attached is documentation of the structural sufficiency of the existing tower to support the proposed ICE loading. The proposed shared use of this tower therefore is technically feasible.

B. **Legal Feasibility.** Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the proposed shared use of a tower facility such as the Cornwall facility. In addition, § 16-50aa directs the Council to "give such consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of tower facilities. There is no legal impediment to the shared use of the facility.

C. **Environmental Feasibility.** The overall environmental effect of the proposed shared use is positive. The effect on the facility itself is minimal, for the following reasons:

1. The proposed installation would have an insignificant incremental visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the planned site. In particular, the proposed installation would not increase the height of the approved tower, and would not extend the boundaries of the tower site outside the limits of the approved site compound.

2. The proposed installation would not increase the noise levels at the planned facility by six decibels or more.

3. Addition of ICE's antenna at this site would not result in a total radio frequency (RF) electromagnetic radiation power density level in excess of that adopted by the Federal Communications Commission. The changes to the facility will not increase the calculated power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by C Squared Systems, LLC, ICE's operations at the site will result in a calculated power density of approximately 11.35%; the combined site operations will result in a total power density of approximately 70.27%.

4. The proposed installation will not require any water or sanitary facilities, or generate air emissions or discharges to water bodies. After construction is complete, the proposed installation will not generate any traffic other than for occasional maintenance.

The proposed use of this facility would therefore have a minimal adverse environmental effect, and is environmentally feasible.

E. **Economic Feasibility.** The parties have entered into an agreement to share the use of the existing tower on terms mutually agreeable to the parties. The proposed tower sharing is therefore economically feasible.

F. **Public Safety Concerns.** ATC and ICE are not aware of any public safety concerns relative to the proposed sharing of the tower. As stated above, the tower is structurally capable of supporting the proposed and existing antennas. The proposed shared use will not interfere with municipal public safety activities. The purpose of the Department of Homeland Security is to maintain public safety, and the proposed installation is intended to advance that goal.

Conclusion

For the reasons set forth above, the proposed shared use of the Bethany tower satisfies the criteria stated in C.G.S. § 16-50aa and advances the General Assembly's and the Council's goal of preventing the proliferation of towers in Connecticut. ATC and ICE therefore request that the Council issue an order approving the proposed use.

Please contact the undersigned at (860) 798-7454 if there are any questions with respect to this matter. Thank you for your consideration.

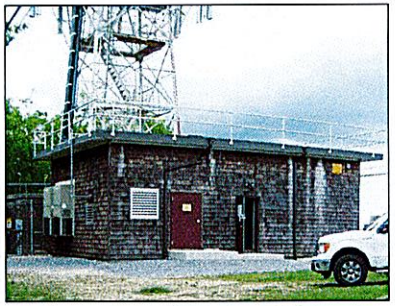
Respectfully yours,

Jennifer Young Gaudet

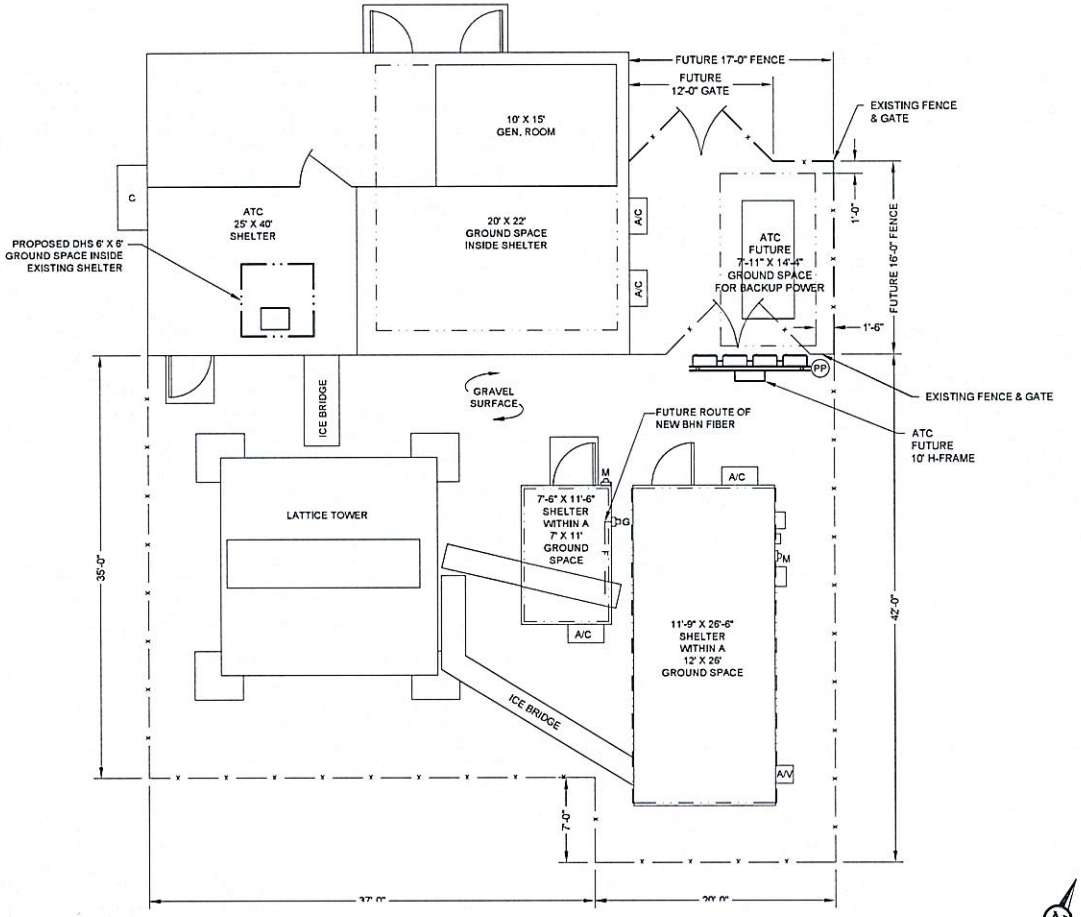
Jennifer Young Gaudet

Attachments

cc: Honorable Gordon Ridgway, First Selectman, Town of Cornwall
American Tower Corporation (underlying property owner)



EXISTING BUILDING PHOTO



1 SITE PLAN

SCALE : 1" = 10'-0" (11 X 17)
1" = 5'-0" (24 X 36)

GENERAL NOTES:

HEIGHT: EXCLUDING THE TOWER, NO EXISTING OR PROPOSED STRUCTURE (INCLUDING EQUIPMENT) WILL EXCEED THE HEIGHT LIMITATIONS OF THE DISTRICT.

LIGHTING: THE PROPOSED INSTALLATION AND EXISTING FACILITY WILL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS.

GRADE: EXISTING GRADE WILL BE MAINTAINED FOR PROPOSED CONSTRUCTION.

PARKING: ONE PARKING SPACE IS REQUIRED, ONE EXISTING.

SIGNAGE: EXTERIOR SIGNS ARE NOT PROPOSED EXCEPT AS REQUIRED BY THE FCC.

STORM WATER CONTROL: THE PROPOSED FACILITY WILL RESULT IN AN INSIGNIFICANT INCREASE IN STORM WATER RUNOFF. CONSEQUENTLY, NO WATER QUALITY CONTROL DEVICES ARE PROPOSED.

UTILITIES: SANITARY SEWER SERVICE AND POTABLE WATER ARE NOT APPLICABLE PER THE USE. IF APPLICABLE, SUBCONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO EXCAVATING.

DRIVEWAY: A DRIVEWAY PERMIT IS NOT REQUIRED FOR THIS PROJECT. THE PROJECT WILL NOT REQUIRE RIGHT-OF-WAY OR PROPERTY TO BE DEDICATED FOR PUBLIC USE.

MISC: NO NOISE, SMOKE, DUST, VAPORS OR ODOR WILL RESULT FROM THIS PROJECT.

AMERICAN TOWER®
ATC TOWER SERVICES, INC.
8505 FREEPORT PARKWAY
SUITE 135
IRVING, TX 75063
PHONE: (972) 999-8900
FAX: (972) 999-8940
NYSE AMT

ATC SITE NUMBER:
88009

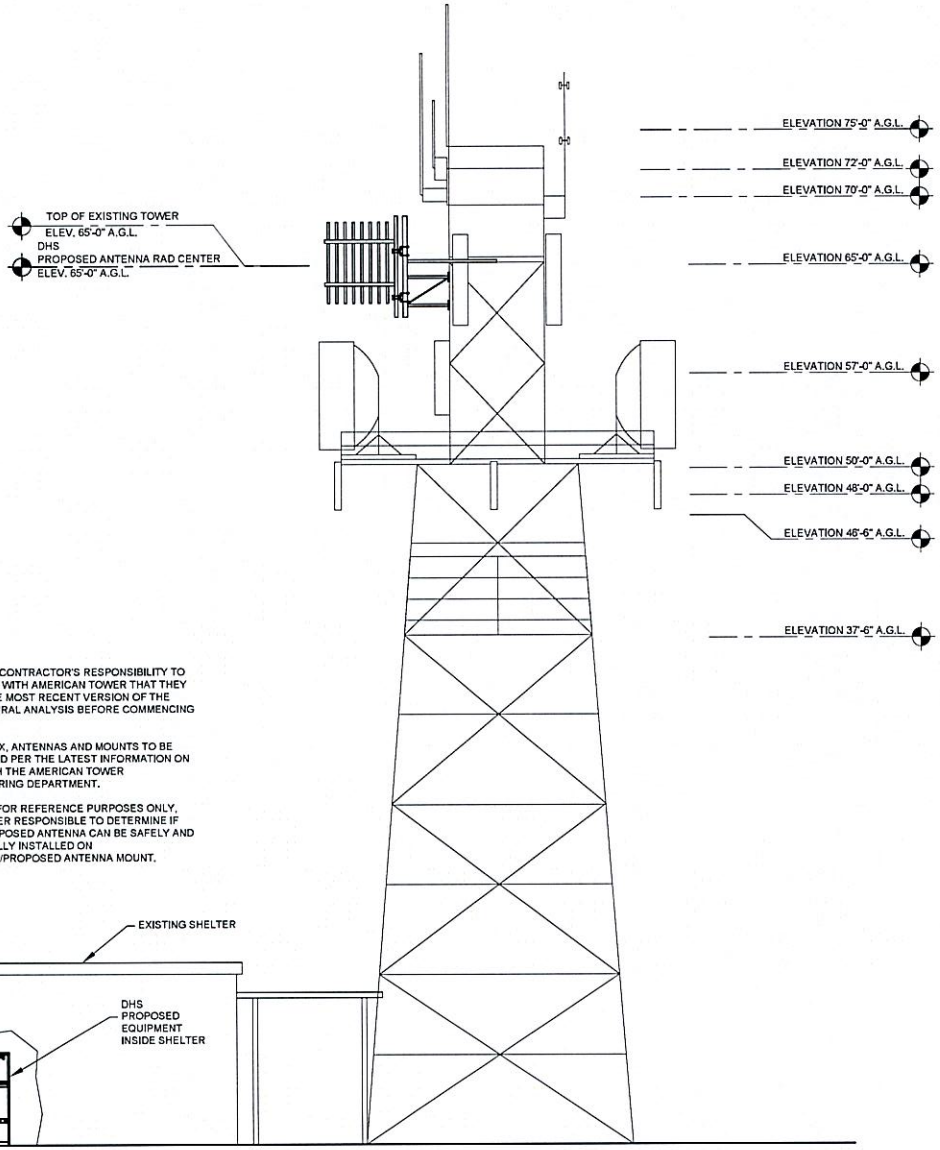
ATC SITE NAME:
CORNWALL CT

STAMP HERE:

DRAWN BY:	AD
CHECKED BY:	AE
DATE DRAWN:	03-19-13
JOB NO:	481297K9

SHEET TITLE:
SITE PLAN

SHEET NUMBER:	REV. #
A-1	0



1 TOWER ELEVATION
SCALE: NOT TO SCALE

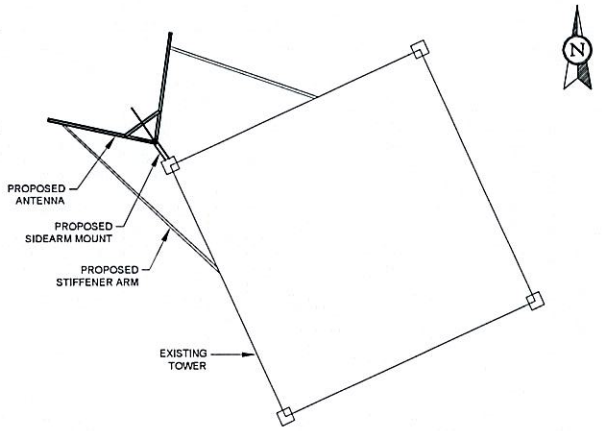
	YAGI
	PROPOSED
AZIMUTH	325°
RAD CENTER	65'
# OF ANTENNAS	1
ANTENNA MANUFACTURER	SINCLAIR
ANTENNA MODEL	SV228-HF2SNM
MECHANICAL DT.	N/A
CABLE QUANTITY	1
CABLE SIZE	7/8" COAX

NOTE:

CONTRACTOR TO DETERMINE COAX CABLE LENGTH.

2 RF CONFIGURATION CHART
SCALE: NOT TO SCALE

NOTES:
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH AMERICAN TOWER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK.
- ALL COAX, ANTENNAS AND MOUNTS TO BE INSTALLED PER THE LATEST INFORMATION ON FILE WITH THE AMERICAN TOWER ENGINEERING DEPARTMENT.
- LAYOUT FOR REFERENCE PURPOSES ONLY. CUSTOMER RESPONSIBLE TO DETERMINE IF THE PROPOSED ANTENNA CAN BE SAFELY AND PHYSICALLY INSTALLED ON EXISTING/PROPOSED ANTENNA MOUNT.



3 PLAN VIEW
SCALE: NOT TO SCALE

AMERICAN TOWER®
ATC TOWER SERVICES, INC.
8505 FREEPORT PARKWAY
SUITE 135
IRVING, TX 75063
PHONE: (972) 999-8900
FAX: (972) 999-8940
NYSE AMT

ATC SITE NUMBER:
88009

ATC SITE NAME:
CORNWALL CT

STAMP HERE:

DRAWN BY:	AD
CHECKED BY:	AE
DATE DRAWN:	03-19-13
JOB NO:	481297K9

SHEET TITLE:
TOWER ELEVATION

SHEET NUMBER:	REV. #
A-2	0

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**65 ft Self Supported Tower**
ATC Site Name	:	**Cornwall CT, CT**
ATC Site Number	:	**88009**
Engineering Number	:	**52991722**
Proposed Carrier	:	**US Treasury**
Carrier Site Name	:	**Cornwall**
Carrier Site Number	:	**B_05_084_007**
Site Location	:	**End of Mohawk Mountain Road** **Cornwall, CT 06759-4232** **41.821303,-73.296442**
County	:	**Litchfield**
Date	:	**April 26, 2013**
Max Usage	:	**95%**
Result	:	**Pass**

Esha Modi
Project Engineer

Esha Modi

STATE OF CONNECTICUT
RAPHAEL T. MOHAMED
No. 25112
LICENSED
PROFESSIONAL ENGINEER

4/29/13

AMERICAN TOWER®
CORPORATION

Eng. Number 52991722
April 26, 2013

Table of Contents

AMERICAN TOWER®
CORPORATION

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 65 ft self supported tower to reflect the change in loading by US Treasury .

Supporting Documents

Tower Drawings	CSEI ATC #26472221 dated September 19, 2006

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/EIA-222.

Basic Wind Speed:	80 mph (Fastest Mile)
Basic Wind Speed w/ Ice:	69 mph (Fastest Mile)w/ 1/2" radial ice concurrent
Code:	ANSI/TIA/EIA-222-F / 2003 IBC , Sec. 1609.1.1, Exception (5) & Sec. 3108.4 w/ 2005 CT Supplement & 2009 CT Amendment

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact me via email at esha.modi@americantower.com or call 919-466-5017.

Existing and Reserved Equipment

Mount Elev.[1] (ft)	Qty.	Antenna	Mount Type	Lines	Carrier
75.0	3	EMS RR65-19-02DP	Platform w/ Hadrails	(6) 7/8" Coax	Sprint Nextel
72.0	1	8' Yagi		(2) 7/8" Coax	Unknown
	1	8' Dipole			
70.0	3	Decibel DB809KE-XT		(3) 7/8" Coax	Sprint Nextel
65.0	3	KMW AM-X-CD-16-65-00T-RET		(2) 0.78" AWG 6 (12) 1 1/4" Coax (1) 3" Conduit (1) 0.39" Cable	AT&T Mobility
	6	Ericsson RRUS 11			
	6	Powerwave TT19-08BP111-001			
	1	Andrew ABT-DMDF-ADBH			
	6	Allgon 7770.00A			
57.0	3	RFS APXVSPP18-C-A20	Leg	(3) 1 1/4" Hybriflex	Sprint Nextel
	3	Alcatel-Lucent 800 MHz RRH			
	3	Alcatel-Lucent RRH2x40 (700)			
50.0	4	10' HP Dish	Large Platform	-	Alltel
48.0	3	Decibel 776QNB120EXM		(12) 7/8" Coax (3) 1/2" Coax	
46.5	6	Antel LPA-80063/6CF		(12) 1 5/8" Coax	
	3	Antel BXA-70063/6CF-EDIN-X			
	3	Antel BXA-171063/12CF			
	6	RFS FD9R6004/2C-3L			
37.5	-	-	Platform	-	--

Proposed Equipment

Elevation[1] (ft)		Qty.	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
62.0	65.0	1	Sinclair SV228-HF2SNM	Pipe	(1) 7/8" Coax	US Treasury

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax in the place of the existing coax.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	44%	Pass
Diagonals	95%	Pass
Horizontals	18%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Uplift (Kips)	60.0	55.0	92%
Axial (Kips)	113.9	72.1	63%

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
62.0	0.123	0.001	0.415

***Deflection, Twist and Sway was evaluated considering a design wind speed of 50 mph (Fastest Mile) per ANSI/TIA/EIA-222-F.**

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CORPORATION

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Tower Services and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Tower Services is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Loads: 80 mph no ice
69 mph w/ 1/2" radial ice
50 mph no ice

Job Information

Tower : 88009	Location : Cornwall CT, CT	
Code: TIA/EIA-222 Rev F	Shape : Square	Base Width : 19.72 ft
Client : US Treasury		Top Width : 7.00 ft

Sections Properties

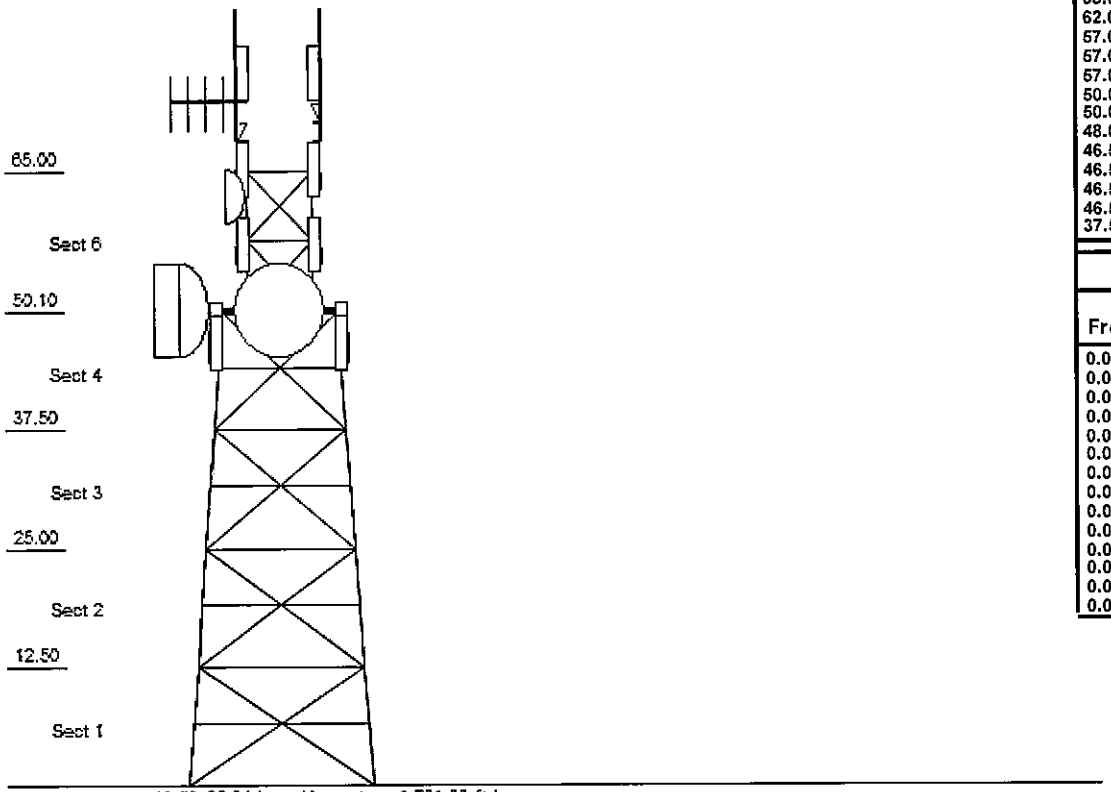
Section	Leg Members		Diagonal Members	Horizontal Members
1 - 2	SAE 33 ksi	6X6X0.625	SAU 36 ksi 3X4X0.25	DAL 36 ksi 3X2.5X0.25
3	SAE 33 ksi	6X6X0.5	SAU 36 ksi 3.5X3X0.25	DAL 36 ksi 3.5X3X0.3125
4	SAE 33 ksi	6X6X0.5	SAE 36 ksi 3.5X3.5X0.25	DAL 36 ksi 3.5X3X0.3125
5	SAE 33 ksi	6X6X0.5		
6	SAE 33 ksi	6X6X0.5	SAU 36 ksi 3X2X0.25	DAL 36 ksi 2.5X2X0.25

Discrete Appurtenance

Elev (ft)	Type	Qty	Description
75.00	Panel	3	EMS RR65-19-02DP
72.00	Yagi	1	8' Yagi
72.00	Whip	1	8' Dipole
70.00	Whip	3	Decibel DB809KE-XT
65.01	Panel	1	Fire Warden Cab
65.00	Panel	3	KMW AM-X-CD-16-65-00T-RET
65.00	Panel	6	Ericsson RRUS 11
65.00	Panel	6	Powerwave TT19-08BP111-001
65.00	Panel	1	Andrew ABT-DMDF-ADBH
65.00	Panel	6	Allgon 7770.00A
62.00	Dish	1	Sinclair SV228-HF2SNM
57.00	Panel	3	RFS APXVSPP18-C-A20
57.00	Panel	3	Alcatel-Lucent 800 MHz RRH
57.00	Panel	3	Alcatel-Lucent RRH2x40 (700)
50.00	Dish	4	10' HP Dish
50.00	Platform	1	Large Flat Platform
48.00	Panel	3	Decibel 776QNB120EXM
46.50	Panel	6	Antel LPA-80063/6CF
46.50	Panel	3	Antel BXA-70063/6CF-EDIN-X
46.50	Panel	3	Antel BXA-171063/12CF
46.50		6	RFS FD9R6004/2C-3L
37.50	Platform	1	Platform

Linear Appurtenance

Elev (ft) From	To	Qty	Description
0.000	75.000	6	7/8" Coax
0.000	72.000	2	7/8" Coax
0.000	70.000	3	7/8" Coax
0.000	65.000	1	Wave Guide
0.000	65.000	1	Climbing Ladder
0.000	65.000	1	3" Conduit
0.000	65.000	12	1 1/4" Coax
0.000	65.000	2	0.78" AWG 6
0.000	65.000	1	0.39" Cable
0.000	62.000	1	7/8" Coax
0.000	57.000	3	1 1/4" Hybriflex
0.000	48.000	12	7/8" Coax
0.000	48.000	3	1/2" Coax
0.000	46.500	12	1 5/8" Coax



Uplift 55.04 k Moment 1,761.00 ft-k
Vert 72.11 k Total Down 32.46 k
Horiz 15.93 k Total Shear 38.39 k

Site Number: 88009
Location: Cornwall CT, CT

Code: TIA/EIA-222 Rev F

4/26/2013 2:03:36 PM

Gh : 1.19

Section Forces

LoadCase Normal No Ice — 80.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333
Dead LF: 1.000
Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
6	57.55	19.21	34.57	20.49	0.00	0.53	2.00	1.00	1.00	0.71	49.16	3.72	0.00	2,923.2	0.0	2,255.95	170.93	2,426.87	1	
5	50.05	18.45	4.30	0.15	0.00	1.00	2.10	1.00	1.00	1.00	4.45	0.02	0.00	338.7	0.0	206.05	1.10	42.99	1	**
4	43.75	17.76	36.30	32.66	0.00	0.42	2.24	1.00	1.00	0.66	57.79	3.13	0.00	4,078.5	0.0	2,746.23	132.59	2,878.82	1	
3	31.25	16.38	38.14	37.17	0.00	0.40	2.28	1.00	1.00	0.65	62.37	3.13	0.00	4,314.8	0.0	2,779.81	122.33	2,902.14	1	
2	18.75	16.38	41.41	37.17	0.00	0.37	2.36	1.00	1.00	0.64	65.21	3.13	0.00	4,427.8	0.0	3,010.87	122.33	3,133.20	1	
1	6.25	16.38	43.57	37.17	0.00	0.34	2.44	1.00	1.00	0.63	66.99	3.13	0.00	4,673.4	0.0	3,204.74	122.33	3,327.07	1	
														20,756.4	0.0			14,711.10		

** = 2QzGhAg Controls

LoadCase Normal Ice — 69.28 mph Wind Normal To Face with Ice

Allow Stress Inc: 1.333
Dead LF: 1.000
Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
6	57.55	14.40	34.57	44.72	23.52	0.76	1.83	1.00	1.00	0.86	73.24	3.72	1.24	4,526.1	1,603.0	2,301.71	153.83	2,455.53	1	
5	50.05	13.84	4.30	0.98	0.77	1.00	2.10	1.00	1.00	1.00	5.28	0.02	0.01	426.9	88.2	183.34	0.99	32.24	1	**
4	43.75	13.32	36.30	64.66	31.39	0.61	1.89	1.00	1.00	0.76	85.34	3.13	1.04	6,327.2	2,248.7	2,568.48	119.33	2,687.81	1	
3	31.25	12.29	38.14	72.47	34.65	0.59	1.91	1.00	1.00	0.75	92.28	3.13	1.04	6,734.0	2,419.1	2,590.35	110.09	2,700.44	1	
2	18.75	12.29	41.41	72.92	35.06	0.54	1.98	1.00	1.00	0.72	93.86	3.13	1.04	6,929.8	2,502.0	2,725.89	110.09	2,835.98	1	
1	6.25	12.29	43.57	73.37	35.47	0.50	2.05	1.00	1.00	0.70	94.67	3.13	1.04	7,288.0	2,614.6	2,853.80	110.09	2,963.89	1	
														32,232.0	11,475.6			13,675.88		

** = 2QzGhAg Controls

LoadCase 45 deg No Ice — 80.00 mph Wind at 45 deg From Face with No Ice

Allow Stress Inc: 1.333
Dead LF: 1.000
Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
6	57.55	19.21	34.57	20.49	0.00	0.53	2.00	1.20	1.20	0.71	58.99	3.72	0.00	2,923.2	0.0	2,707.13	170.93	2,878.06	1	
5	50.05	18.45	4.30	0.15	0.00	1.00	2.10	1.20	1.20	1.00	5.34	0.02	0.00	338.7	0.0	247.26	1.10	42.99	1	**
4	43.75	17.76	36.30	32.66	0.00	0.42	2.24	1.20	1.20	0.66	69.34	3.13	0.00	4,078.5	0.0	3,295.48	132.59	3,428.07	1	
3	31.25	16.38	38.14	37.17	0.00	0.40	2.28	1.20	1.20	0.65	74.85	3.13	0.00	4,314.8	0.0	3,335.77	122.33	3,458.10	1	
2	18.75	16.38	41.41	37.17	0.00	0.37	2.36	1.20	1.20	0.64	78.25	3.13	0.00	4,427.8	0.0	3,613.04	122.33	3,735.37	1	
1	6.25	16.38	43.57	37.17	0.00	0.34	2.44	1.20	1.20	0.63	80.39	3.13	0.00	4,673.4	0.0	3,845.69	122.33	3,968.02	1	
														20,756.4	0.0			17,510.62		

** = 2QzGhAg Controls

Site Number: 88009
Location: Cornwall CT, CT

Code: TIA/EIA-222 Rev F

4/26/2013 2:03:36 PM

Gh : 1.19

Section Forces

LoadCase 45 deg Ice

69.28 mph Wind at 45 deg From Face with Ice

Allow Stress Inc: 1.333
Dead LF: 1.000
Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
6	57.55	14.40	34.57	44.72	23.52	0.76	1.83	1.20	1.20	0.86	87.89	3.72	1.24	4,526.1	1,603.0	2,762.05	153.83	2,915.87	1	
5	50.05	13.84	4.30	0.98	0.77	1.00	2.10	1.20	1.20	1.00	6.34	0.02	0.01	426.9	88.2	220.01	0.99	32.24	1	**
4	43.75	13.32	36.30	64.66	31.39	0.61	1.89	1.20	1.20	0.76	102.41	3.13	1.04	6,327.2	2,248.7	3,082.18	119.33	3,201.50	1	
3	31.25	12.29	38.14	72.47	34.65	0.59	1.91	1.20	1.20	0.75	110.73	3.13	1.04	6,734.0	2,419.1	3,108.42	110.09	3,218.50	1	
2	18.75	12.29	41.41	72.92	35.06	0.54	1.98	1.20	1.20	0.72	112.63	3.13	1.04	6,929.8	2,502.0	3,271.06	110.09	3,381.15	1	
1	6.25	12.29	43.57	73.37	35.47	0.50	2.05	1.20	1.20	0.70	113.61	3.13	1.04	7,288.0	2,614.6	3,424.56	110.09	3,534.65	1	
														32,232.0	11,475.6			16,283.92		

** = 2QzGhAg Controls

LoadCase Normal

50.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333
Dead LF: 1.000
Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
6	57.55	7.50	34.57	20.49	0.00	0.53	2.00	1.00	1.00	0.71	49.16	3.72	0.00	2,923.2	0.0	881.23	66.77	948.00	1	
5	50.05	7.21	4.30	0.15	0.00	1.00	2.10	1.00	1.00	1.00	4.45	0.02	0.00	338.7	0.0	80.49	0.43	16.79	1	**
4	43.75	6.94	36.30	32.66	0.00	0.42	2.24	1.00	1.00	0.66	57.79	3.13	0.00	4,078.5	0.0	1,072.75	51.79	1,124.54	1	
3	31.25	6.40	38.14	37.17	0.00	0.40	2.28	1.00	1.00	0.65	62.37	3.13	0.00	4,314.8	0.0	1,085.86	47.78	1,133.65	1	
2	18.75	6.40	41.41	37.17	0.00	0.37	2.36	1.00	1.00	0.64	65.21	3.13	0.00	4,427.8	0.0	1,176.12	47.78	1,223.91	1	
1	6.25	6.40	43.57	37.17	0.00	0.34	2.44	1.00	1.00	0.63	66.99	3.13	0.00	4,673.4	0.0	1,251.85	47.78	1,299.64	1	
														20,756.4	0.0			5,746.52		

** = 2QzGhAg Controls

LoadCase 45 deg

50.00 mph Wind at 45 deg From Face with No Ice

Allow Stress Inc: 1.333
Dead LF: 1.000
Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
6	57.55	7.50	34.57	20.49	0.00	0.53	2.00	1.20	1.20	0.71	58.99	3.72	0.00	2,923.2	0.0	1,057.47	66.77	1,124.24	1	
5	50.05	7.21	4.30	0.15	0.00	1.00	2.10	1.20	1.20	1.00	5.34	0.02	0.00	338.7	0.0	96.59	0.43	16.79	1	**
4	43.75	6.94	36.30	32.66	0.00	0.42	2.24	1.20	1.20	0.66	69.34	3.13	0.00	4,078.5	0.0	1,287.30	51.79	1,339.09	1	
3	31.25	6.40	38.14	37.17	0.00	0.40	2.28	1.20	1.20	0.65	74.85	3.13	0.00	4,314.8	0.0	1,303.04	47.78	1,350.82	1	
2	18.75	6.40	41.41	37.17	0.00	0.37	2.36	1.20	1.20	0.64	78.25	3.13	0.00	4,427.8	0.0	1,411.34	47.78	1,459.13	1	
1	6.25	6.40	43.57	37.17	0.00	0.34	2.44	1.20	1.20	0.63	80.39	3.13	0.00	4,673.4	0.0	1,502.22	47.78	1,550.01	1	
														20,756.4	0.0			6,840.08		

** = 2QzGhAg Controls

Site Number: 88009
Location: Cornwall CT, CT

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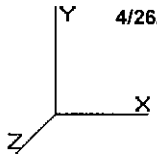

Tower Loading

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Distance From Face (ft)	X Angle (deg)	Vert Ecc (ft)
75.00	EMS RR65-19-02DP	3	23.00	5.867	0.73	51.51	6.692	0.73	0.000	0.00	0.000
72.00	8' Yagi	1	30.00	12.000	1.00	127.20	21.590	1.00	0.000	0.00	0.000
72.00	8' Dipole	1	25.00	3.010	1.00	50.60	4.340	1.00	0.000	0.00	4.000
70.00	Decibel DB809KE-XT	3	37.50	3.660	1.00	64.00	4.920	1.00	0.000	0.00	6.100
65.01	Fire Warden Cab	1	1500.00	218.40	1.00	2000.00	320.00	1.00	0.000	0.00	0.000
65.00	KMW AM-X-CD-16-65-00T-	3	48.50	8.260	0.78	95.00	9.080	0.78	0.000	0.00	0.000
65.00	Ericsson RRUS 11	6	50.00	2.990	0.67	69.90	3.340	0.67	0.000	0.00	0.000
65.00	Powerwave TT19-08BP111-	6	16.00	0.640	0.50	21.80	0.820	0.50	0.000	0.00	0.000
65.00	Andrew ABT-DMDF-ADBH	1	1.10	0.050	1.00	1.80	0.110	1.00	0.000	0.00	0.000
65.00	Allgon 7770.00A	6	35.00	5.880	0.75	68.00	6.430	0.75	0.000	0.00	0.000
62.00	Sinclair SV228-HF2SNM	1	93.00	15.830	1.00	347.20	48.370	1.00	0.000	0.00	3.000
57.00	RFS APXVSPP18-C-A20	3	57.00	8.260	0.82	106.50	9.080	0.82	0.000	0.00	0.000
57.00	Alcatel-Lucent 800 MHz RRH	3	53.00	2.490	0.92	74.10	2.820	0.92	0.000	0.00	0.000
57.00	Alcatel-Lucent RRH2x40 (700)	3	50.00	2.480	1.00	71.08	2.810	1.00	0.000	0.00	0.000
50.00	10' HP Dish	4	705.00	99.100	0.80	1310.00	100.75	0.80	0.000	0.00	0.000
50.00	Large Flat Platform	1	4000.00	75.000	1.00	4700.00	95.000	1.00	0.000	0.00	0.000
48.00	Decibel 776QNB120EXM	3	117.00	25.900	0.63	240.76	26.970	0.63	0.000	0.00	0.000
46.50	Antel LPA-80063/6CF	6	27.00	10.340	0.94	101.00	11.180	0.94	0.000	0.00	0.000
46.50	Antel BXA-70063/6CF-EDIN-X	3	17.00	7.730	0.74	58.00	8.540	0.74	0.000	0.00	0.000
46.50	Antel BXA-171063/12CF	3	15.00	4.790	0.88	42.40	5.460	0.88	0.000	0.00	0.000
46.50	RFS FD9R6004/2C-3L	6	2.00	0.360	0.50	6.00	0.570	0.50	0.000	0.00	1.180
37.50	Platform	1	1200.00	25.000	1.00	1500.00	32.000	1.00	0.000	0.00	0.000
	Totals	68	11703.10			17977.05			Number of Appurtenances : 22		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Wind	Spread On Faces	Bundling Arrangement
0.00	75.00	7/8" Coax	6	1.09	0.33	33.30	1	Separate
0.00	72.00	7/8" Coax	2	1.09	0.33	0.00	1	Separate
0.00	70.00	7/8" Coax	3	1.09	0.33	33.30	1	Separate
0.00	65.00	0.39" Cable	1	0.39	0.07	100.00	1	Separate
0.00	65.00	0.78" AWG 6	2	0.78	0.59	100.00	1	Separate
0.00	65.00	1 1/4" Coax	12	1.55	0.63	33.30	1	Separate
0.00	65.00	3" Conduit	1	3.50	7.58	100.00	1	Separate
0.00	65.00	Climbing Ladder	1	3.00	4.00	100.00	Lin App	Separate
0.00	65.00	Wave Guide	1	3.00	5.00	100.00	1	Separate
0.00	62.00	7/8" Coax	1	1.09	0.33	100.00	1	Separate
0.00	57.00	1 1/4" Hybriflex	3	1.54	1.00	33.30	1	Separate
0.00	48.00	1/2" Coax	3	0.63	0.15	100.00	1	Separate
0.00	48.00	7/8" Coax	12	1.09	0.33	33.30	1	Separate
0.00	46.50	1 5/8" Coax	12	1.98	0.82	50.00	1	Separate

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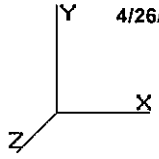

Force/Stress Summary

Section: 1 1 Bot Elev (ft): 0.00 Height (ft): 12.500

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.625	-66.85	45 deg Ice	12.57	50	50	50	63.9	21.2	150.45	0	0	0.00	0.00	44	Member Z
HORIZ DAL - 3X2.5X0.25	-3.52	Normal Ice	17.84	50	50	25	113.3	15.0	39.37	0	0	0.00	0.00	8	Member X
DIAG SAU - 3X4X0.25	-7.12	Normal No Ice	22.57	50	50	50	212.0	4.4	7.49	0	0	0.00	0.00	95	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.625	48.98	45 deg No Ice	33	187.69	0	0	0.00	0.00	26	Member
HORIZ DAL - 3X2.5X0.25	3.45	Normal No Ice	36	75.74	0	0	0.00	0.00	4	Member
DIAG SAU - 3X4X0.25	8.04	Normal Ice	36	48.67	0	0	0.00	0.00	16	Member

Section: 2 1 Bot Elev (ft): 12.50 Height (ft): 12.500

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.625	-52.00	45 deg Ice	12.57	50	50	50	63.9	21.2	150.45	0	0	0.00	0.00	34	Member Z
HORIZ DAL - 3X2.5X0.25	-1.79	Normal No Ice	15.96	50	50	25	101.3	17.1	44.91	0	0	0.00	0.00	3	Member X
DIAG SAU - 3X4X0.25	-7.57	Normal No Ice	21.04	50	50	50	197.6	5.1	8.62	0	0	0.00	0.00	87	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.625	37.81	45 deg No Ice	33	187.69	0	0	0.00	0.00	20	Member
HORIZ DAL - 3X2.5X0.25	2.41	Normal No Ice	36	75.74	0	0	0.00	0.00	3	Member
DIAG SAU - 3X4X0.25	6.76	Normal No Ice	36	48.67	0	0	0.00	0.00	13	Member

Section: 3 1 Bot Elev (ft): 25.00 Height (ft): 12.500

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.5	-37.40	45 deg Ice	12.57	50	50	50	63.9	21.2	121.67	0	0	0.00	0.00	30	Member Z
HORIZ DAL - 3.5X3X0.3125	-2.41	Normal No Ice	14.08	50	50	25	76.8	20.9	81.04	0	0	0.00	0.00	2	Member X
DIAG SAU - 3.5X3X0.25	-7.90	Normal No Ice	19.56	50	50	50	186.0	5.8	8.97	0	0	0.00	0.00	88	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.5	25.13	45 deg No Ice	33	151.78	0	0	0.00	0.00	16	Member
HORIZ DAL - 3.5X3X0.3125	3.38	Normal No Ice	36	111.44	0	0	0.00	0.00	3	Member
DIAG SAU - 3.5X3X0.25	6.94	Normal No Ice	36	44.92	0	0	0.00	0.00	15	Member

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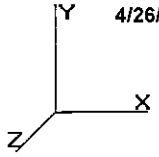

Force/Stress Summary

Section: 4 1 Bot Elev (ft): 37.50 Height (ft): 12.500

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.5	-22.39	45 deg Ice	12.55	50	50	50	63.8	21.2	121.74	0	0	0.00	0.00	18	Member Z
HORIZ DAL - 3.5X3X0.3125	-2.03	Normal No Ice	12.50	50	50	25	68.2	22.2	85.74	0	0	0.00	0.00	2	Member X
DIAG SAE - 3.5X3.5X0.25	-8.08	Normal No Ice	18.26	50	50	50	157.9	8.0	13.50	0	0	0.00	0.00	59	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.5	12.54	45 deg No Ice	33	151.78	0	0	0.00	0.00	8	Member
HORIZ DAL - 3.5X3X0.3125	2.24	Normal No Ice	36	111.44	0	0	0.00	0.00	2	Member
DIAG SAE - 3.5X3.5X0.25	7.14	Normal No Ice	36	48.67	0	0	0.00	0.00	14	Member

Section: 5 1 Bot Elev (ft): 50.00 Height (ft): 0.100

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.5	-4.35	Normal No Ice	3.89	50	50	50	0.0	0.0	13,332.	0	0	0.00	0.00	0	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00		

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.5	3.60	Normal No Ice	33	13,332.	0	0	0.00	0.00	0	User Input
HORIZ	0.00		0	0.00	0	0	0.00	0.00	0	
DIAG	0.00		0	0.00	0	0	0.00	0.00	0	

Section: 6 1 Bot Elev (ft): 50.10 Height (ft): 14.900

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.5	-10.81	45 deg Ice	7.45	100	100	100	75.8	19.8	113.59	0	0	0.00	0.00	9	Member Z
HORIZ DAL - 2.5X2X0.25	-2.01	45 deg Ice	7.000	100	100	100	198.1	5.1	10.80	0	0	0.00	0.00	18	Member Z
DIAG SAU - 3X2X0.25	-1.52	Normal No Ice	10.22	50	75	50	160.3	7.7	9.22	0	0	0.00	0.00		

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG SAE - 6X6X0.5	5.78	45 deg No Ice	33	151.78	0	0	0.00	0.00	3	Member
HORIZ DAL - 2.5X2X0.25	0.69	Normal No Ice	36	61.34	0	0	0.00	0.00	1	Member
DIAG SAU - 3X2X0.25	4.56	Normal Ice	36	34.27	0	0	0.00	0.00	13	Member

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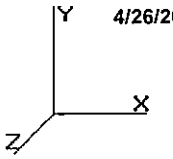

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Support Forces Summary

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)
45 deg	1c	-0.34	8.16	-2.16
	1b	-3.15	-16.55	-3.15
	1a	-2.15	8.07	-0.34
	1	-4.96	32.77	-4.96
Normal	1c	2.78	24.64	-4.38
	1b	-0.97	-8.41	-2.57
	1a	0.97	-8.41	-2.57
	1	-2.78	24.64	-4.38
45 deg Ice	1c	-3.54	12.72	-2.23
	1b	-10.36	-47.03	-10.34
	1a	-2.22	12.40	-3.55
	1	-8.99	72.11	-8.99
45 deg No Ice	1c	-2.29	8.23	-4.11
	1b	-9.49	-55.04	-9.48
	1a	-4.10	8.02	-2.29
	1	-11.26	71.25	-11.26
Normal Ice	1c	3.88	52.49	-7.56
	1b	-5.21	-27.39	-8.90
	1a	5.21	-27.39	-8.90
	1	-3.88	52.49	-7.56
Normal No Ice	1c	5.71	50.43	-9.79
	1b	-3.91	-34.20	-8.00
	1a	3.91	-34.20	-8.00
	1	-5.71	50.43	-9.79

(-) = Uplift (+) = Down

Max Uplift:	55.04 (kip)	Moment:	1,761.00 (ft-kip)	45 deg No Ice
Max Down:	72.11 (kip)	Total Down:	32.46 (kip)	
Max Shear:	15.93 (kip)	Total Shear:	38.39 (kip)	

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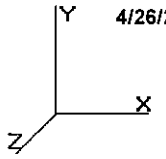

Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
50.00 mph Wind at 45 deg From Face with No Ice	37.50	0.0095	0.0136	0.2464
	50.00	0.0141	0.0083	0.8303
	57.55	0.0680	0.0025	0.6292
	65.00	0.1231	0.0017	0.4150
50.00 mph Wind Normal To Face with No Ice	37.50	0.0089	0.0119	0.1898
	50.00	0.0134	0.0071	0.6601
	57.55	0.0628	0.0030	0.4813
	65.00	0.1134	0.0017	0.3863
69.28 mph Wind at 45 deg From Face with Ice	37.50	0.0246	0.0248	0.5828
	50.00	0.0356	0.0090	1.9609
	57.55	0.1836	0.0177	1.6635
	65.00	0.3357	0.0111	1.1251
69.28 mph Wind Normal To Face with Ice	37.50	0.0226	0.0311	0.4317
	50.00	0.0335	0.0197	1.5017
	57.55	0.1710	0.0210	1.2886
	65.00	0.3116	0.0085	1.0683
80.00 mph Wind at 45 deg From Face with No Ice	37.50	0.0244	0.0279	0.5118
	50.00	0.0362	0.0148	1.6766
	57.55	0.1742	0.0134	1.5148
	65.00	0.3148	0.0086	1.0445
80.00 mph Wind Normal To Face with No Ice	37.50	0.0228	0.0327	0.3672
	50.00	0.0343	0.0232	1.2489
	57.55	0.1610	0.0165	1.1700
	65.00	0.2902	0.0081	0.9684
		0.0000	0.0000	0.0000

C Squared Systems, LLC
65 Dartmouth Drive, Unit A3
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions

Homeland Security

88009

(Cornwall CT)

Mohawk Mountain Road, Cornwall, CT 06759

a.k.a. (36 Mohawk Mountain Road)

May 1, 2013

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of the U.S. Department of Homeland Security's antenna on the existing self-support tower located on Mohawk Mountain Road in Cornwall, CT. The coordinates of the tower are 41° 49' 16.69" N, 73° 17' 47.19" W.

The Department of Homeland Security is proposing the following installation:

1) Install one 148-174 MHz directional yagi antenna.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. 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 cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antenna is operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished installation.

4. Calculation Results

Table 1 below outlines the Department of Homeland Security's proposed antenna configuration for the site. The associated data sheet and antenna pattern for this specific antenna is included in Attachment C.

Azimuth	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBd)	Power ERP (Watts)	Antenna Model	Horizontal Beam Width	Vertical Beam Width	Antenna Centerline Height (feet)
325°	148 - 174	125	10.0	1250	SV228-HF2SNM	50	66	65

Table 1: Proposed Antenna Configuration

The calculated power density results for the proposed Department of Homeland Security installation in terms of %MPE are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antenna) to a value of 2000 feet horizontal distance from the antenna. In addition to the other worst case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antenna were completed using a local maximum off beam antenna gain (within ±5 degrees of the true mathematical angle) to incorporate a realistic worst case scenario.

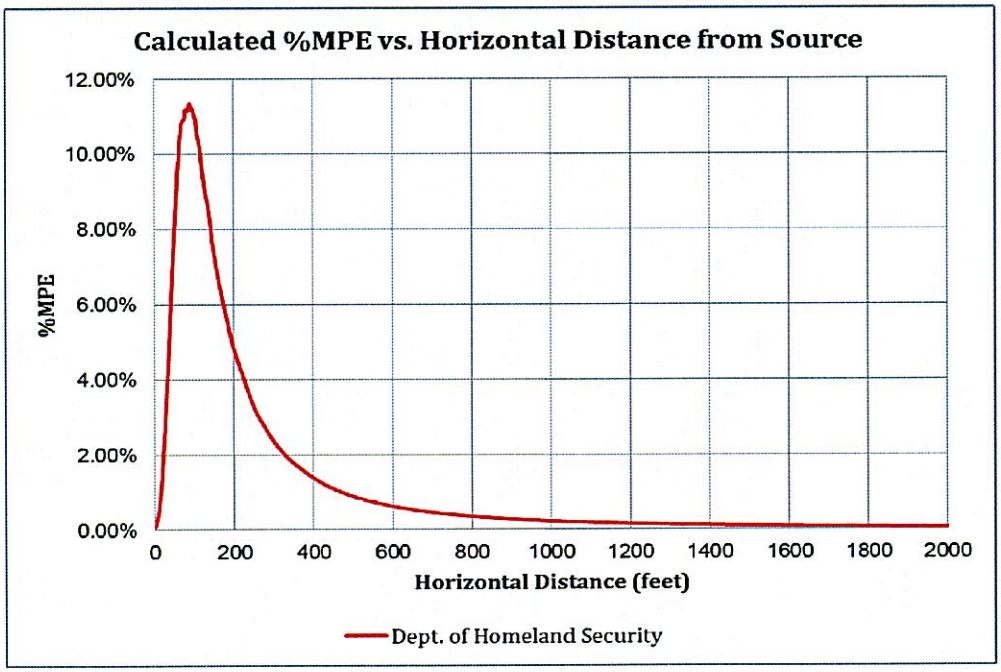

Figure 1: Graph of Percent of MPE vs. Distance

The highest percent of MPE at ground level from the proposed Dept. of Homeland Security's installation was calculated to be **11.35%** and occurs at a horizontal distance of 88 feet from the proposed antenna. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 120' and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below outlines the cumulative power density information for the site. The calculated result for the Department of Homeland Security in Table 2 is based upon the maximum %MPE value shown in Figure 1.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
AT&T UMTS	65	880	2	565	0.0962	0.5867	58.92%
AT&T UMTS	65	1900	2	875	0.1489	1.0000	
AT&T GSM	65	880	1	283	0.0241	0.5867	
AT&T GSM	65	1900	4	525	0.1787	1.0000	
AT&T LTE	65	734	1	1313	0.1117	0.4893	
Verizon PCS	48	1900	6	305	0.2856	1.0000	
Verizon cellular	48	850	6	61	0.0064	0.5667	
Verizon	48	5.4 GHz	1	0.61	0.0001	1.0000	
Verizon LTE	46.5	750	2	1005	0.3342	0.5000	
Sprint/Nextel iDEN	60	851	12	100	0.1199	0.5673	
Sprint CDMA/LTE	60.2	1900	2	778	0.1544	1.0000	
Sprint CDMA/LTE	60.2	850	1	438	0.0435	0.5667	
Dept. of Homeland Security	65	148	1	1250	0.0227	0.2000	11.35%
						Total	**70.27%**

Table 2: Carrier Information[1] [2]

As indicated in the CSC power density database from May 1, 2013, the 58.92% MPE value for the existing tower configuration is based upon recent filings for AT&T and Sprint, as well as RF field measurements reported in the Verizon study dated April 30, 2012.

[1] The power density information for carriers other than Homeland Security was taken directly from the CSC database dated 5/1/2013.

[2] Antenna height listed for Homeland Security is in reference to the American Tower Services, Inc. Structural Analysis Report dated April 29, 2013.

5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antenna at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **70.27% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished installation.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Daniel L. Goulet
C Squared Systems, LLC

May 1, 2013
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[3]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (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[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (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

Table 3: FCC Limits for Maximum Permissible Exposure (MPE)

[3] 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.

[4] 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 cannot exercise control over their exposure.

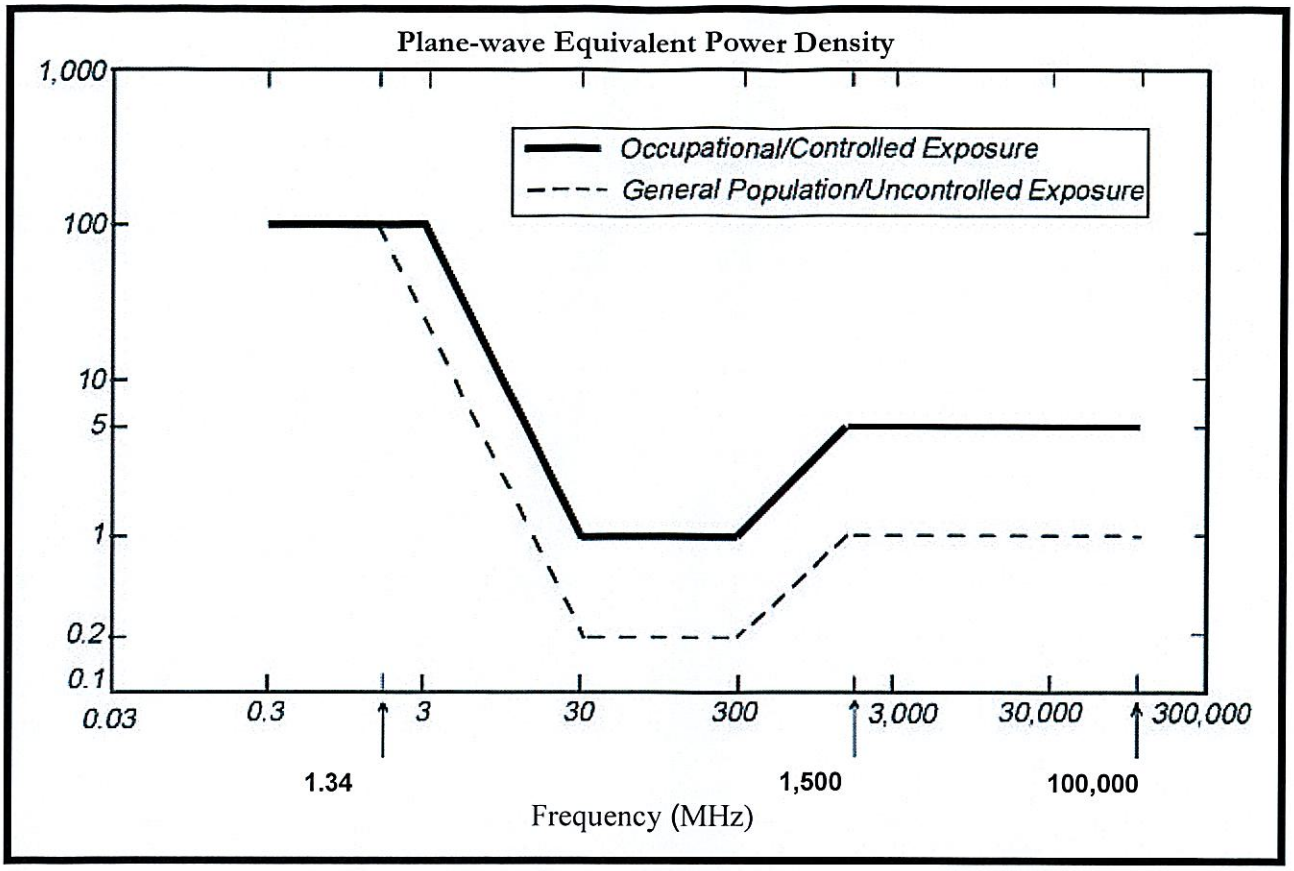

Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Antenna Data Sheet and Electrical Pattern

148-174 MHz

Manufacturer:	Sinclair
Model #:	SV228-HF2SNM
Frequency Band:	148-174 MHz
Gain:	10 dBd
Vertical Beamwidth:	66°
Horizontal Beamwidth:	50°
Polarization:	Vertical or Horizontal
Size L x W x D:	72" x 116" x 62"