

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

December 21, 2012

Eric Dahl
Nexlink Global Services
55 Lynn Road
Ivoryton, CT 06442

RE: **EM-AT&T-001-121203** –AT&T Mobility notice of intent to modify an existing telecommunications facility located at 122 Jonathan Trumbull Highway, Andover, Connecticut.

Dear Mr. Dahl:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The coax lines shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by GPD Group dated November 27, 2012 and stamped by David Granger; and
- Not more than 45 days following completion of the antenna installation, AT&T shall provide documentation certified by a professional engineer that its installation complied with the recommendation of the structural analysis.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not more than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated November 30, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency

emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,



Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Robert Burbank, First Selectman, Town of Andover



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December 3, 2012

The Honorable Robert Burbank
First Selectman
Town of Andover
17 School Road
Andover, CT 06232

RE: **EM-AT&T-001-121203** –AT&T Mobility notice of intent to modify an existing telecommunications facility located at 122 Jonathan Trumbull Highway, Andover, Connecticut.

Dear First Selectman Burbank:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by December 17, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/cm



November 30, 2012

VIA OVERNIGHT DELIVERY

Ms. Linda Roberts, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051



RE: AT&T Mobility – Notice of Exempt Modification
122 Jonathan Trumbull Highway (RTE 6), Andover, CT

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of AT&T Mobility (“AT&T”). AT&T is enhancing the capabilities of its wireless system in Connecticut by implementing LTE technology. In order to do so, AT&T will modify antenna and equipment configurations at a number of existing sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the First Selectman of Andover.

AT&T plans to modify the existing facility at 122 Jonathan Trumbull Highway (RTE 6), Andover, owned by AT&T Towers (coordinates 41°44’59.97”N, -72°24’9.72”W). Attached are drawings depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration. Also included is a power density calculation reflecting the modification to AT&T’s operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. AT&T proposes to add three (3) new antennas, six (6) RRU's and one (1) surge arrester. Additionally, AT&T will install one (1) fiber cable and two (2) DC control cables within a 3" flex conduit inside the monopole.


2. The proposed changes will not extend the site boundaries. AT&T will install additional equipment on a concrete pad extension, adjacent to its existing equipment. Thus, there will be no effect on the site compound.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" 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 in the attached power density calculations, AT&T's operations at the site will result in a power density of 1.44%; the combined site operations will result in a total power density of 7.55%.

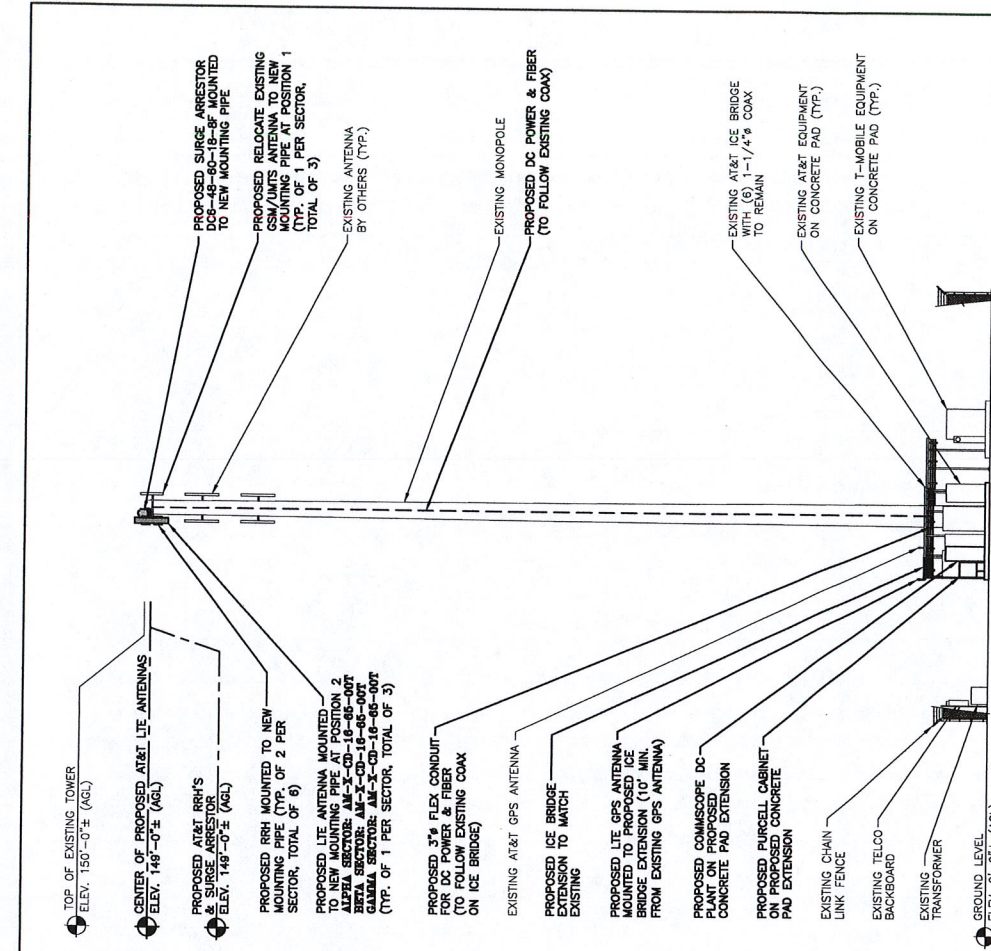
Please feel free to call me with any questions or concerns regarding this matter.
Thank you for your consideration.

Respectfully submitted,
AT&T Mobility

By: 
Eric Dahl, Consultant
edahl@comcast.net
860-227-1975

cc: Honorable Robert Burbank, First Selectman, Town of Andover

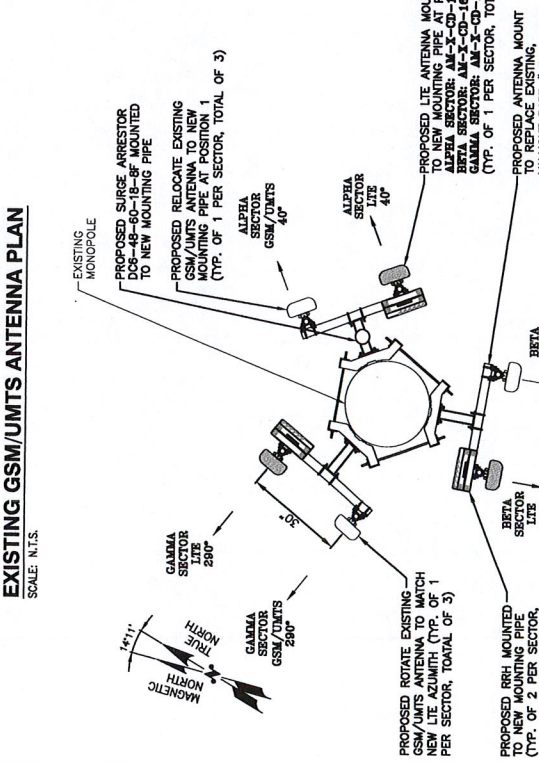
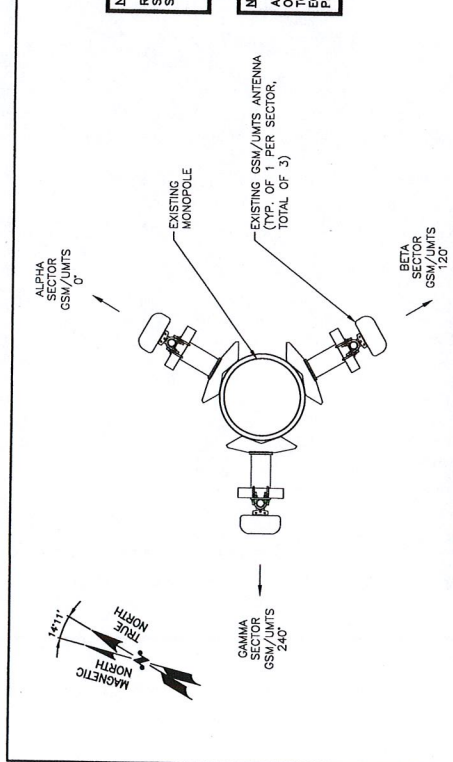
Attachments



NORTH ELEVATION
SCALE: 3/32"=1'-0"
0 5'-4" 10'-8" 21'-4" 32'-0"

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

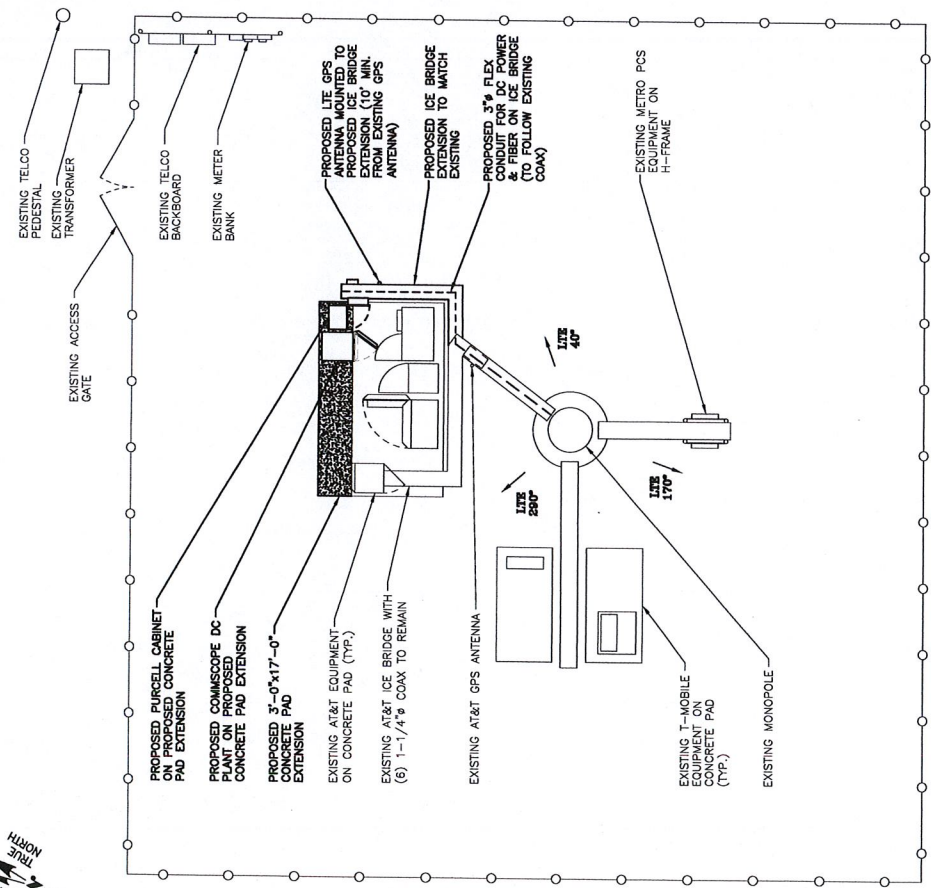
NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT LOADS WILL BE DETERMINED PRIOR TO CONSTRUCTION.



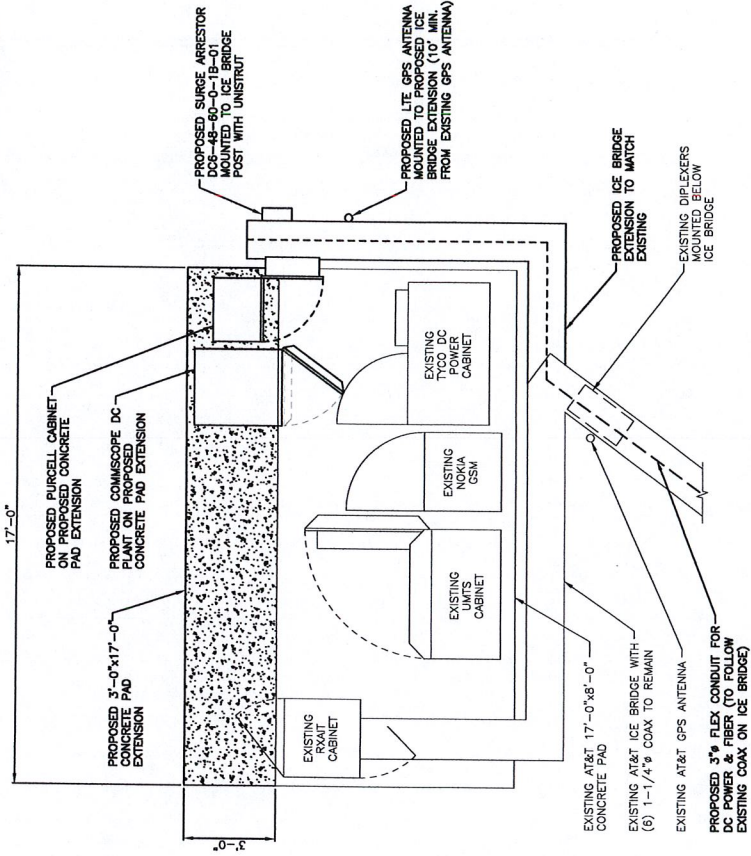
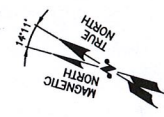
		SITE NAME: ANDOVER NORTHWEST 122 JONATHAN TRUMBULL HW. RTE. 6 ANDOVER, CT 06232 NEW LONDON COUNTY	
		SITE NUMBER: CT5860 UNIT#: 2A 800 MARSHALL PHELPS ROAD WINDSOR, CT 06095	
		860 GOSWOLD STREET N. ANDOVER, MA 01842 TEL: 978.333.3333 FAX: 978.333.3333	
NO. DATE 0 08/08/12 ISSUED FOR REVIEW SCALE: AS SHOWN	REVISIONS DESIGNED BY: DC	DRAWN BY: RS	PROJECT NO. 5860.01
ANTENNA PLAN & ELEVATION (LTE)		DRAWING NUMBER A-2	

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT HAS BEEN DETERMINED PRIOR TO CONSTRUCTION.



COMPOUND PLAN
SCALE: 3/16" = 1'-0"



EQUIPMENT PLAN
SCALE: 1/2" = 1'-0"



Hudson
Design Group
100 GOSWOLD STREET
MIDDLETOWN, CONNECTICUT 06457
TEL: (860) 337-6555
FAX: (860) 338-6555

NETLINK
GLOBAL SERVICES COMPANY
a Uniflex Global Services Company
800 MARSHALL PHELPS ROAD, UNIT# 2A
WINDSOR, CT 06095

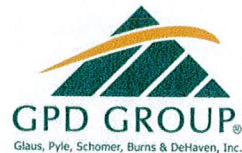
SITE NUMBER: CT5860
SITE NAME: ANDOVER NORTHWEST
122 JONATHAN TRUMBELL HW. RTE. 6
ANDOVER, CT 06232
NEW LONDON COUNTY

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

AT&T	
COMPOUND PLAN & EQUIPMENT PLAN (LITE)	
JOB NUMBER	5860.01
DRAWING NUMBER	A-1
REV	0



Nexlink Global Services
800 Marshall Phelps Road
Windsor, CT 06095
(860) 219-9563



Kevin Clements
1117 Perimeter Center West, Suite W303
Atlanta, GA 30338
(678) 781-5061
kclements@gpdgroup.com

GPD #: 2012801.81
November 27, 2012

STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:
Site USID: 27084
Site FA: 10070910
Site Name: ANDOVER NORTH
AT&T Project: MOD LTE 082712

ANALYSIS CRITERIA:
Codes: TIA/EIA-222-F, 2003 IBC, & ASCE 7-05
85 mph with 0" ice
28 mph with 1" ice

SITE DATA:
122 Jonathan Trumbull Highway (Route 6),
Andover, CT 06232, Tolland County
Latitude 41° 44' 59.971" N , Longitude 72° 24' 9.716" W
Market: NEW ENGLAND
149' Modified EEI Monopole

Ms. Stephanie Wenderoth,

GPD is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

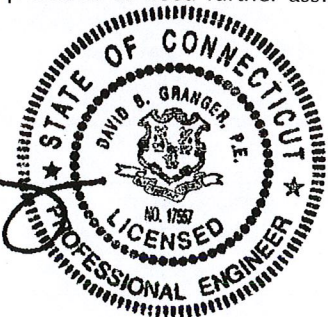
Analysis Results

Tower Stress Level with Proposed Equipment:	66.4%	Pass
Foundation Ratio with Proposed Equipment:	78.5%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and Nexlink Global Services. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,

David B. Granger, P.E.
Connecticut #: 17557



SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility to Nexlink Global Services. This report was commissioned by Ms. Stephanie Wenderoth of Nexlink Global Services.

Modifications designed by GPD Project #: 2009260.48, dated 1/29/09 have been installed and were considered fully effective in the analysis.

The proposed coax shall be internal to the monopole in order for the results of this analysis to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	64.3%	Pass
Anchor Rods	51.4%	Pass
Base Plate	66.4%	Pass
Foundation	78.5%	Pass

ANALYSIS METHOD

tnxTower (Version 6.0.4.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
Equipment Modification Form	AT&T Internal Loading Document, uploaded 8/29/12	Siterra
RF Data Sheet	Not Provided	N/A
Tower Design	EEL Job #: 12026 Rev. 1, dated 12/2/03	Siterra
Foundation Design	EEL Job #: 12026, dated 12/2/03	Siterra
Geotechnical Report	VN Engineers Project #: 23-120G, dated 10/17/03	Siterra
Previous Structural Analysis	GPD Project #: 2009260.48, dated 1/29/09	Siterra
Modification Drawings	GPD Project #: 2009260.48, dated 1/29/09	Siterra
Post Modification Inspection	GPD Project #: 2009513.00, dated 3/18/09	Siterra

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations.
6. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
9. Modifications designed by GPD Project #: 2009260.48, dated 1/29/09 have been installed and were considered fully effective in the analysis.
10. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
11. All existing loading was obtained from the previous structural analysis report by GPD Project #: 2009260.48, dated 1/29/09, site photos, and the provided Equipment Modification Form, and is assumed to be accurate.
12. The proposed coax shall be internal to the monopole in order for the results of this analysis to be valid.
13. The existing AT&T loading found in the previous structural analysis report by GPD Project #: 2009260.48, dated 1/29/09 and site photos was found to vary from the loading listed within the provided Equipment Modification Form. The existing/reserved loading has been modeled based on the loading reflected within the previous structural analysis and site photos.
14. The proposed mounts were provided by Ms. Stephanie Wenderoth of Nexlink Global Services.
15. The proposed coax configuration was assumed based on experience with similar projects.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD Group should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD GROUP has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the specified code recommended amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

APPENDIX B

tnxTower Output File

tnxTower GPD Group 520 South Main Street, Ste 2531 Akron, OH Phone: (330) 572-2100 FAX: (330) 572-2101	Job 27084 ANDOVER NORTH	Page 1 of 4
	Project 2012801.81	Date 13:43:30 11/27/12
	Client Nexlink Global Services	Designed by tclark

Tower Input Data

There is a pole section.
 This tower is designed using the TIA/EIA-222-F standard.
 The following design criteria apply:

- Tower is located in Tolland County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 28 mph is used in combination with ice.
- Deflections calculated using a wind speed of 50 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.333.
- Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A		Weight plf
						<i>f</i> ² / <i>ft</i>		
Climbing Pegs	C	No	CaAa (Out Of Face)	149.00 - 10.00	1	No Ice	0.01	0.31
						1/2" Ice	0.12	0.71
						1" Ice	0.22	1.71
						2" Ice	0.41	5.56
						4" Ice	0.82	20.59
Safety Line 3/8	C	No	CaAa (Out Of Face)	149.00 - 10.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
LDF6-50A (1-1/4 FOAM)	A	No	Inside Pole	149.00 - 8.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
7/8" DC Power Cable	A	No	Inside Pole	149.00 - 8.00	2	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
						2" Ice	0.00	0.60
						4" Ice	0.00	0.60
1/2" Fiber Cable	A	No	Inside Pole	149.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	140.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	130.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82

tnxTower GPD Group 520 South Main Street, Ste 2531 Akron, OH Phone: (330) 572-2100 FAX: (330) 572-2101	Job 27084 ANDOVER NORTH	Page 2 of 4
	Project 2012801.81	Date 13:43:30 11/27/12
	Client Nexlink Global Services	Designed by tclark

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
4' T-Arm - Flat (GPD)	A	From Leg	0.65	30.0000	149.00	No Ice	3.05	3.45	86.80
			0.38			1/2" Ice	3.97	4.40	110.45
			0.00			1" Ice	4.89	5.35	134.10
						2" Ice	6.73	7.25	181.40
						4" Ice	10.41	11.05	276.00
4' T-Arm - Flat (GPD)	B	From Leg	0.65	30.0000	149.00	No Ice	3.05	3.45	86.80
			0.38			1/2" Ice	3.97	4.40	110.45
			0.00			1" Ice	4.89	5.35	134.10
						2" Ice	6.73	7.25	181.40
						4" Ice	10.41	11.05	276.00
4' T-Arm - Flat (GPD)	C	From Leg	0.65	30.0000	149.00	No Ice	3.05	3.45	86.80
			0.38			1/2" Ice	3.97	4.40	110.45
			0.00			1" Ice	4.89	5.35	134.10
						2" Ice	6.73	7.25	181.40
						4" Ice	10.41	11.05	276.00
7250.03 w/ Mount Pipe	A	From Leg	1.30	30.0000	149.00	No Ice	4.40	3.50	39.30
			0.75			1/2" Ice	4.88	4.44	73.75
			0.00			1" Ice	5.33	5.20	118.23
						2" Ice	6.28	6.76	229.29
						4" Ice	8.51	10.08	571.10
7250.03 w/ Mount Pipe	B	From Leg	1.30	30.0000	149.00	No Ice	4.40	3.50	39.30
			0.75			1/2" Ice	4.88	4.44	73.75
			0.00			1" Ice	5.33	5.20	118.23
						2" Ice	6.28	6.76	229.29
						4" Ice	8.51	10.08	571.10
7250.03 w/ Mount Pipe	C	From Leg	1.30	30.0000	149.00	No Ice	4.40	3.50	39.30
			0.75			1/2" Ice	4.88	4.44	73.75
			0.00			1" Ice	5.33	5.20	118.23
						2" Ice	6.28	6.76	229.29
						4" Ice	8.51	10.08	571.10
AM-X-CD-16-65-00T w/ Mount Pipe	A	From Leg	1.30	30.0000	149.00	No Ice	6.97	5.56	54.90
			0.75			1/2" Ice	7.53	6.46	109.84
			0.00			1" Ice	8.07	7.24	174.93
						2" Ice	9.18	8.86	327.75
						4" Ice	11.52	12.32	754.82
AM-X-CD-16-65-00T w/ Mount Pipe	B	From Leg	1.30	30.0000	149.00	No Ice	6.97	5.56	54.90
			0.75			1/2" Ice	7.53	6.46	109.84
			0.00			1" Ice	8.07	7.24	174.93
						2" Ice	9.18	8.86	327.75
						4" Ice	11.52	12.32	754.82
AM-X-CD-16-65-00T w/ Mount Pipe	C	From Leg	1.30	30.0000	149.00	No Ice	6.97	5.56	54.90
			0.75			1/2" Ice	7.53	6.46	109.84
			0.00			1" Ice	8.07	7.24	174.93
						2" Ice	9.18	8.86	327.75
						4" Ice	11.52	12.32	754.82
(2) RBS 6601	A	From Leg	1.30	30.0000	149.00	No Ice	0.55	0.40	22.00
			0.75			1/2" Ice	0.70	0.52	34.88
			0.00			1" Ice	0.86	0.64	50.27
						2" Ice	1.19	0.91	89.38
						4" Ice	1.97	1.55	206.33
(2) RBS 6601	B	From Leg	1.30	30.0000	149.00	No Ice	0.55	0.40	22.00
			0.75			1/2" Ice	0.70	0.52	34.88
			0.00			1" Ice	0.86	0.64	50.27
						2" Ice	1.19	0.91	89.38
						4" Ice	1.97	1.55	206.33

tnxTower GPD Group 520 South Main Street, Ste 2531 Akron, OH Phone: (330) 572-2100 FAX: (330) 572-2101	Job	27084 ANDOVER NORTH	Page	3 of 4
	Project	2012801.81	Date	13:43:30 11/27/12
	Client	Nexlink Global Services	Designed by	tclark

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
(2) RBS 6601	C	From Leg	1.30 0.75 0.00	30.0000	149.00	4" Ice 1.97 No Ice 0.55 1/2" Ice 0.70 1" Ice 0.86 2" Ice 1.19	1.55 0.40 0.52 0.64 0.91	206.33 22.00 34.88 50.27 89.38
DC6-48-60-18-8F Surge Suppression Unit	C	From Leg	1.30 0.75 0.00	30.0000	149.00	4" Ice 1.97 No Ice 1.47 1/2" Ice 1.67 1" Ice 1.88 2" Ice 2.33	1.55 1.47 1.67 1.88 2.33	206.33 32.80 50.52 70.72 119.24
Collar Mount (GPD)	C	None		0.0000	140.00	4" Ice 3.38 No Ice 2.14 1/2" Ice 2.35 1" Ice 2.57 2" Ice 2.99	3.38 2.14 2.35 2.57 2.99	252.92 190.30 247.39 304.48 418.66
DR65-19-XXDPQ w/ Mount Pipe	A	From Face	1.00 0.00 0.00	0.0000	140.00	4" Ice 3.83 No Ice 8.64 1/2" Ice 9.29 1" Ice 9.91 2" Ice 11.18	3.83 5.20 6.36 7.24 9.03	647.02 50.55 107.99 177.22 341.81
DR65-19-XXDPQ w/ Mount Pipe	B	From Face	1.00 0.00 0.00	10.0000	140.00	4" Ice 13.83 No Ice 8.64 1/2" Ice 9.29 1" Ice 9.91 2" Ice 11.18	12.81 5.20 6.36 7.24 9.03	809.80 50.55 107.99 177.22 341.81
DR65-19-XXDPQ w/ Mount Pipe	C	From Face	1.00 0.00 0.00	0.0000	140.00	4" Ice 13.83 No Ice 8.64 1/2" Ice 9.29 1" Ice 9.91 2" Ice 11.18	12.81 5.20 6.36 7.24 9.03	809.80 50.55 107.99 177.22 341.81
(2) LNA Amplifier	A	From Face	1.00 0.00 0.00	0.0000	140.00	4" Ice 13.83 No Ice 1.40 1/2" Ice 1.56 1" Ice 1.73 2" Ice 2.09	12.81 0.70 0.82 0.95 1.24	809.80 10.00 20.34 32.81 64.96
(2) LNA Amplifier	B	From Face	1.00 0.00 0.00	10.0000	140.00	4" Ice 2.92 No Ice 1.40 1/2" Ice 1.56 1" Ice 1.73 2" Ice 2.09	1.91 0.70 0.82 0.95 1.24	163.48 10.00 20.34 32.81 64.96
(2) LNA Amplifier	C	From Face	1.00 0.00 0.00	0.0000	140.00	4" Ice 2.92 No Ice 1.40 1/2" Ice 1.56 1" Ice 1.73 2" Ice 2.09	1.91 0.70 0.82 0.95 1.24	163.48 10.00 20.34 32.81 64.96
Collar Mount (GPD)	C	None		0.0000	130.00	4" Ice 2.92 No Ice 2.14 1/2" Ice 2.35 1" Ice 2.57 2" Ice 2.99	1.91 2.14 2.35 2.57 2.99	163.48 190.30 247.39 304.48 418.66
742-213 w/Mount Pipe	A	From Leg	0.87 0.50 0.00	30.0000	130.00	4" Ice 3.83 No Ice 5.42 1/2" Ice 5.95 1" Ice 6.47 2" Ice 7.54	3.83 4.63 6.02 6.93 8.78	647.02 47.55 89.09 142.38 274.97
742-213 w/Mount Pipe	B	From Leg	0.87	30.0000	130.00	4" Ice 9.76 No Ice 5.42	12.68 4.63	678.52 47.55

tnxTower GPD Group 520 South Main Street, Ste 2531 Akron, OH Phone: (330) 572-2100 FAX: (330) 572-2101	Job	27084 ANDOVER NORTH	Page	4 of 4
	Project	2012801.81	Date	13:43:30 11/27/12
	Client	Nexlink Global Services	Designed by	tclark

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb	
742-213 w/Mount Pipe	C	From Leg	0.50	30.0000	130.00	1/2" Ice	5.95	6.02	89.09
			0.00			1" Ice	6.47	6.93	142.38
						2" Ice	7.54	8.78	274.97
						4" Ice	9.76	12.68	678.52
						No Ice	5.42	4.63	47.55
						1/2" Ice	5.95	6.02	89.09
						1" Ice	6.47	6.93	142.38
						2" Ice	7.54	8.78	274.97
						4" Ice	9.76	12.68	678.52

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	4' T-Arm - Flat (GPD)	37	25.553	1.4877	0.0015	31769
140.00	Collar Mount (GPD)	37	22.748	1.4698	0.0013	17649
130.00	Collar Mount (GPD)	37	19.699	1.4327	0.0010	8387

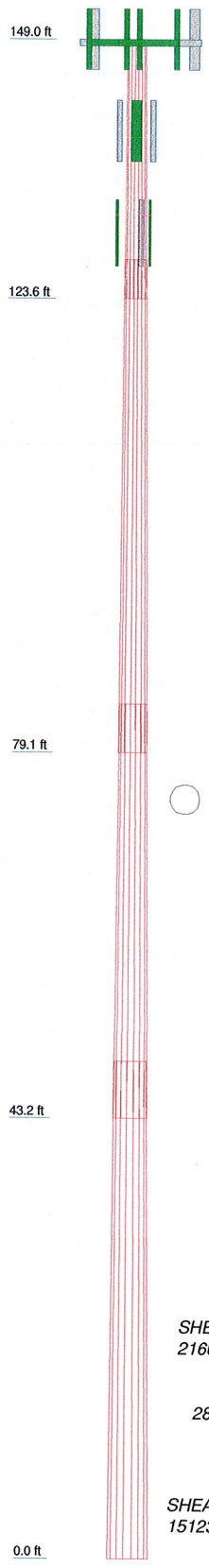
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
L1	149 - 123.58	Pole	TP26.21x21.5x0.1875	1	-2268.80	783148.13	20.6	Pass
L2	123.58 - 79.12	Pole	TP33.96x25.1254x0.1875	2	-5676.26	943729.30	64.3	Pass
L3	79.12 - 43.2	Pole	TP40.11x32.716x0.25	3	-10045.00	1578018.66	61.8	Pass
L4	43.2 - 0	Pole	TP47.5x38.5955x0.3125	4	-18601.60	2426739.73	61.3	Pass
						Summary		
						Pole (L2)	64.3	Pass
						RATING =	64.3	Pass

APPENDIX C

Tower Elevation Drawing

Section	1	2	3	4
Length (ft)	25.42	48.23	40.67	48.78
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.1875	0.2500	0.3125
Socket Length (ft)	3.83	4.75	5.58	38.5955
Top Dia (in)	21.5000	25.1254	32.7160	47.5000
Bot Dia (in)	26.2100	33.9600	40.1100	7035.9
Grade			A572-65	
Weight (lb)	1218.3	2870.7	3971.2	15096.1



DESIGNED APPURTENANCE LOADING

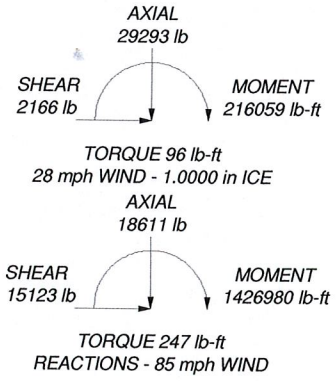
TYPE	ELEVATION	TYPE	ELEVATION
4' T-Arm - Flat (GPD)	149	Collar Mount (GPD)	140
4' T-Arm - Flat (GPD)	149	DR65-19-XXDPQ w/ Mount Pipe	140
4' T-Arm - Flat (GPD)	149	DR65-19-XXDPQ w/ Mount Pipe	140
7250.03 w/ Mount Pipe	149	DR65-19-XXDPQ w/ Mount Pipe	140
7250.03 w/ Mount Pipe	149	(2) LNA Amplifier	140
7250.03 w/ Mount Pipe	149	(2) LNA Amplifier	140
AM-X-CD-16-65-00T w/ Mount Pipe	149	(2) LNA Amplifier	140
AM-X-CD-16-65-00T w/ Mount Pipe	149	Collar Mount (GPD)	130
AM-X-CD-16-65-00T w/ Mount Pipe	149	742-213 w/Mount Pipe	130
(2) RBS 6601	149	742-213 w/Mount Pipe	130
(2) RBS 6601	149	742-213 w/Mount Pipe	130
(2) RBS 6601	149		
DC6-48-60-18-8F Surge Suppression Unit	149		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 64.3%

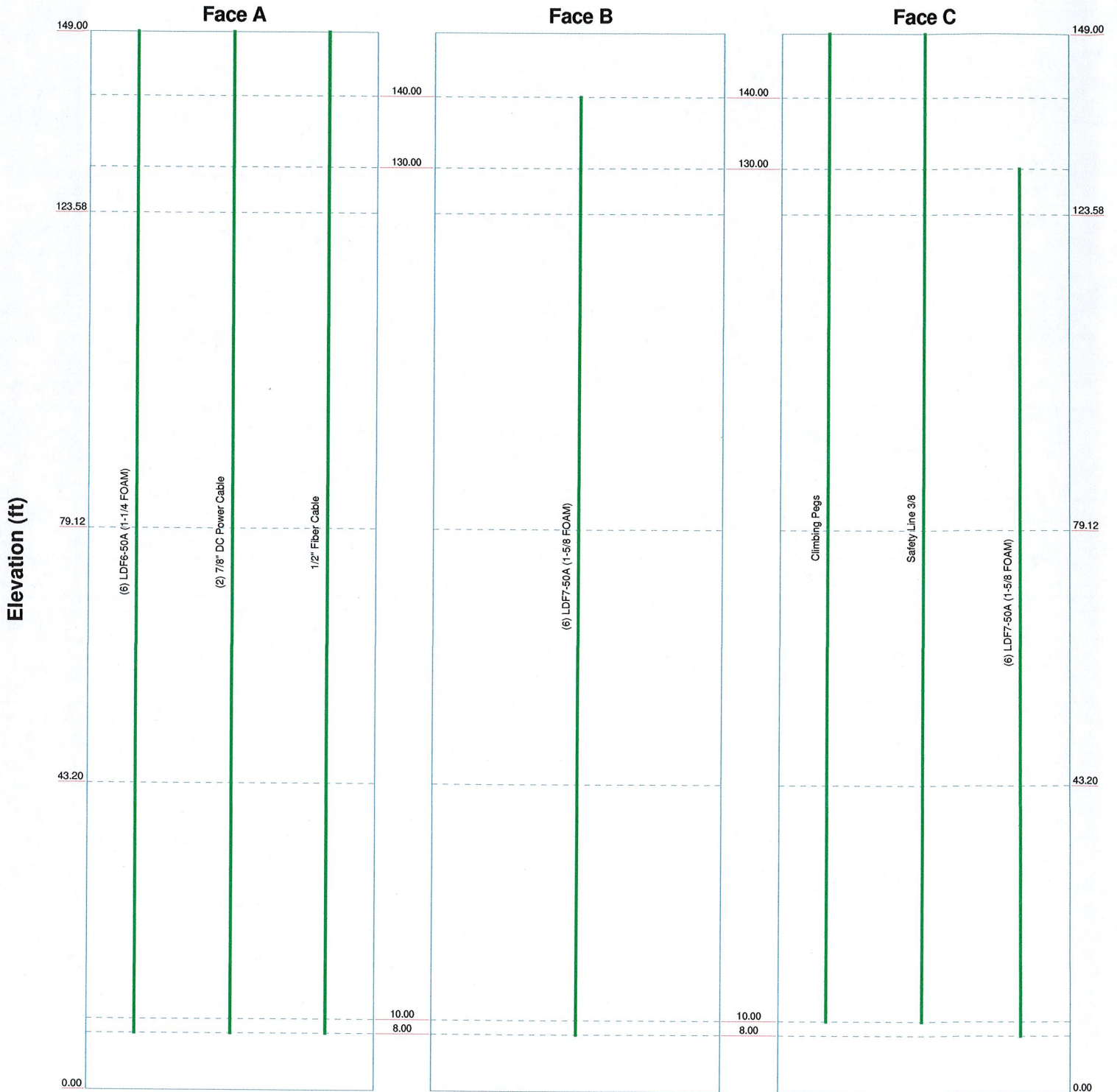



<p>GPD Group 520 South Main Street, Ste 2531 Akron, OH Phone: (330) 572-2100 FAX: (330) 572-2101</p>	Job: 27084 ANDOVER NORTH		
	Project: 2012801.81		
	Client: Nexlink Global Services	Drawn by: tclark	App'd:
	Code: TIA/EIA-222-F	Date: 11/27/12	Scale: NTS
	Path:	Dwg No. E-1	

Feedline Distribution Chart

0' - 149'

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



 GPD Group 520 South Main Street, Ste 2531 Akron, OH Phone: (330) 572-2100 FAX: (330) 572-2101	GPD Group		Job: 27084 ANDOVER NORTH	
	Project: 2012801.81		Drawn by: tclark	App'd:
	Client: Nexlink Global Services		Date: 11/27/12	Scale: NTS
	Code: TIA/EIA-222-F		Path: C:\Users\tclark\Desktop\usofel stuff\TDX\2012801.81\dwg\27084.dwg	
		Dwg No. E-7		

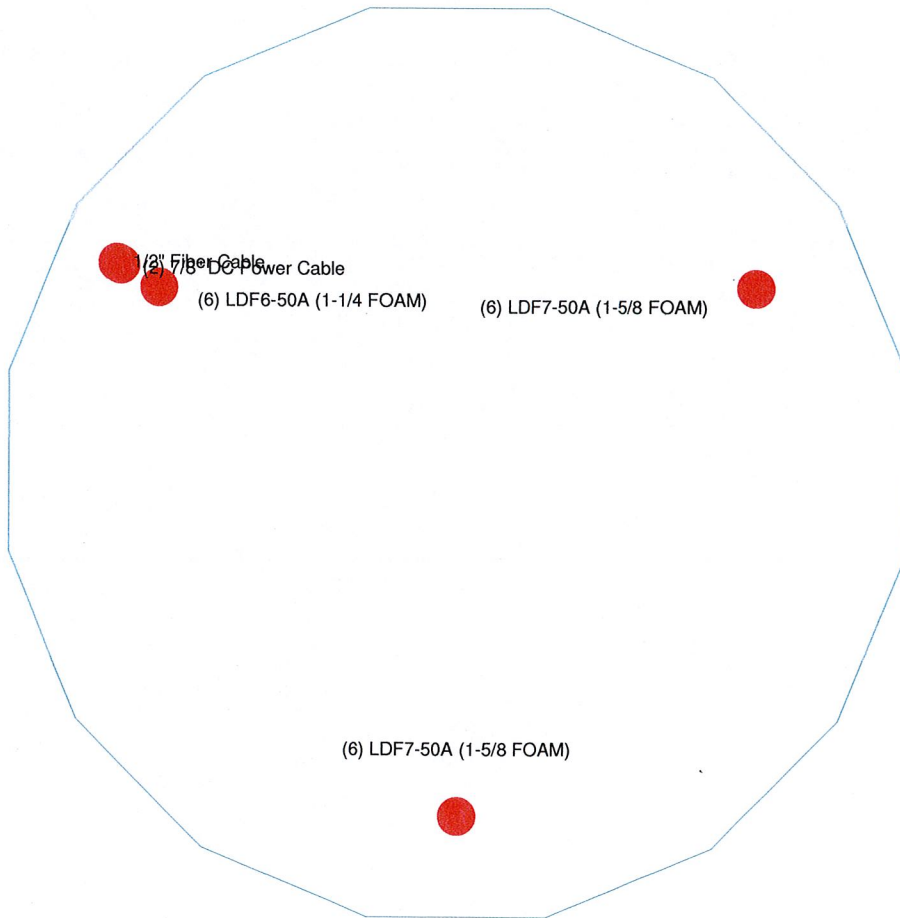
Feedline Plan

Round

Flat

App In Face

App Out Face



 GPD GROUP GPD Group	GPD Group	Job: 27084 ANDOVER NORTH
	520 South Main Street, Ste 2531	Project: 2012801.81
	Akron, OH	Client: Nexlink Global Services
	Phone: (330) 572-2100	Drawn by: tclark
	FAX: (330) 572-2101	Date: 11/27/12
	Code: TIA/EIA-222-F	Scale: NTS
	Path: C:\Users\tclark\Desktop\jns\csl\sh\TIN\2012801.81\mxd\27084.dwg	Dwg No. E-7

APPENDIX D

Anchor Rod & Base Plate Analysis

GPD GROUP

Overturning Moment =	1426.98	k*ft
Axial Force =	18.61	k
Shear Force =	15.12	k

Acceptable Stress Ratio	=	100.0%
-------------------------	---	--------

Anchor Rods		
Number of Rods =	12	
Type =	Upset Rod	
Rod Yield Strength (F _y) =	75	ksi
ASIF =	1.333	
Rod Circle =	56	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in ²
Max Tension on Rod =	100.29	kips
Max Compression on Rod =	103.40	kips
Allow. Rod Force =	195.00	kips
Anchor Rod Capacity =	51.4%	OK

Base Plate		
Location =	External	
Plate Strength (F _y) =	60	ksi
Outside Diameter =	62	in
Plate Thickness =	1.5	in
b =	13.16	in
Le =	7.00	in
fb =	39.87	ksi
Fb =	60	ksi
BP Capacity =	66.4%	OK

Stiffeners		
Configuration =	Every Rod	
Thickness =	1.5	in
Width =	7	in
Notch =	0.75	in
Height =	26	in
Stiffener Strength (F _y) =	50	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.1875	in
Horiz. Weld Type =	Both	
Groove Angle =	45	deg
Groove Size =	0.6875	in
Fillet Size =	0.375	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	79.93	kips
Vert. Weld Capacity =	46.5%	kips
Horiz. Weld Capacity =	35.6%	kips
Stiffener Capacity =	21.5%	kips
Controlling Capacity =	46.5%	OK - Welds Control

Pole		
Pole Diameter =	47.5	in
Number of Sides =	18	
Thickness =	0.3125	in
Pole Yield Strength =	65	ksi



Anchor Rod and Base Plate Stresses
27084 ANDOVER NORTH

APPENDIX E

Foundation Analysis



Mat Foundation Analysis
27084 ANDOVER NORTH
2012801.81

General Info	
Code	TIA/EIA-222-F (ASD)
Bearing On	Soil
Foundation Type	Mono Pad
Pier Type	Round
Reinforcing Known	Yes
Max Capacity	1

Tower Reactions	
Moment, M	1411.361 k-ft
Axial, P	19.328 k
Shear, V	14.863 k

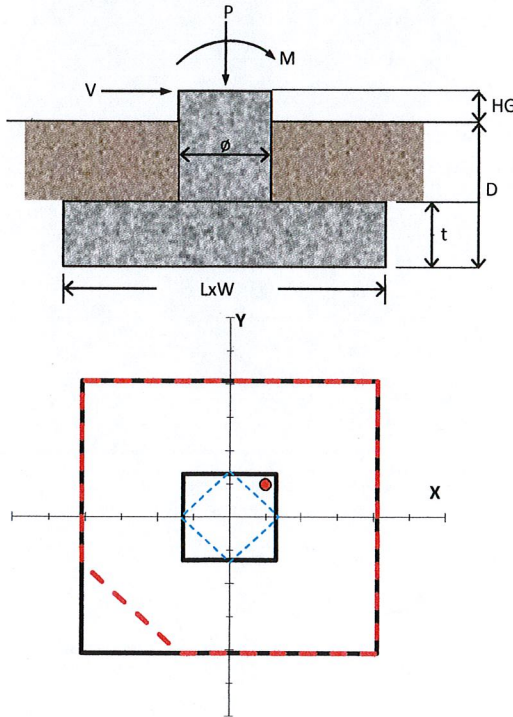
Pad & Pier Geometry	
Pier Diameter, ϕ	6.5 ft
Pad Length, L	20.5 ft
Pad Width, W	20.5 ft
Pad Thickness, t	3 ft
Depth, D	6.5 ft
Height Above Grade, HG	1 ft

Pad & Pier Reinforcing	
Rebar Fy	60 ksi
Concrete Fc'	4 ksi
Clear Cover	3 in
Reinforced Top & Bottom?	Yes
Pad Reinforcing Size	# 8
Pad Quantity Per Layer	21
Pier Rebar Size	# 8
Pier Quantity of Rebar	40

Soil Properties	
Soil Type	Granular
Soil Unit Weight	125 pcf
Angle of Friction, ϕ	30°
Bearing Type	Gross
Ultimate Bearing	6 ksf
Water Table Depth	10 ft
Frost Depth	3 ft

Bearing Summary			Load Case
Q _{xmax}	1.91 ksf		1D+1W
Q _{ymax}	1.91 ksf		1D+1W
Q _{max @ 45°}	2.35 ksf		1D+1W
Q _{(all) Gross}	3.00 ksf		
Controlling Capacity	78.5%	Pass	

Overturning Summary (Required FS=1.5)			Load Case
FS(ot)x	2.97	≥1.5	1D+1W
FS(ot)y	2.97	≥1.5	1D+1W
Controlling Capacity	50.5%	Pass	





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Calculated Radio Frequency Emissions



CT5860

(Andover Northwest)

122 Jonathan Trumbull Highway RTE 6, Andover, CT 06232

November 29, 2012

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located on 122 Jonathan Trumbull Highway RTE 6 in Andover, CT. The coordinates of the tower are 41° 44' 59.97" N, 72° 24' 9.72" W.

AT&T is proposing the following modifications:

- 1) Install three multi-band (700/850/1900/2100 MHz) antennas for their LTE network (one per sector).

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:

$$\text{Power Density} = \frac{1.6^2 \cdot \text{EIRP}}{4\rho \cdot R^2} \times \text{Off Beam Loss}$$

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 antennas are 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 modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower.

Please refer to Attachment C for the vertical patterns of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	%MPE
AT&T UMTS	150	880	1	500	0.0080	0.5867	1.36%
AT&T GSM	150	1900	2	427	0.0136	1.0000	1.36%
AT&T GSM	150	880	4	296	0.0189	0.5867	3.23%
T-Mobile	140	1930	4	282	0.0207	1.0000	2.07%
Pocket	130	2130	3	631	0.0403	1.0000	4.03%
AT&T UMTS	149	880	2	565	0.0018	0.5867	0.31%
AT&T UMTS	149	1900	2	875	0.0028	1.0000	0.28%
AT&T LTE	149	734	1	1313	0.0021	0.4893	0.43%
AT&T GSM	149	880	1	283	0.0005	0.5867	0.08%
AT&T GSM	149	1900	4	525	0.0034	1.0000	0.34%
						Total	7.55%

Table 1: Carrier Information^{1 2 3}

¹ The existing CSC filing for AT&T should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 7/26/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

² In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

³ Antenna height listed for AT&T is in reference to the GPD Group Structural Analysis dated November 27, 2012.

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 antennas 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 **7.55% 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 modifications.

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.

A handwritten signature in black ink, appearing to read 'Daniel L. Goulet'.

Daniel L. Goulet
C Squared Systems, LLC

November 29, 2012

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 Exposure⁴

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 Exposure⁵

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 2: FCC Limits for Maximum Permissible Exposure (MPE)

⁴ 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.

⁵ 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.

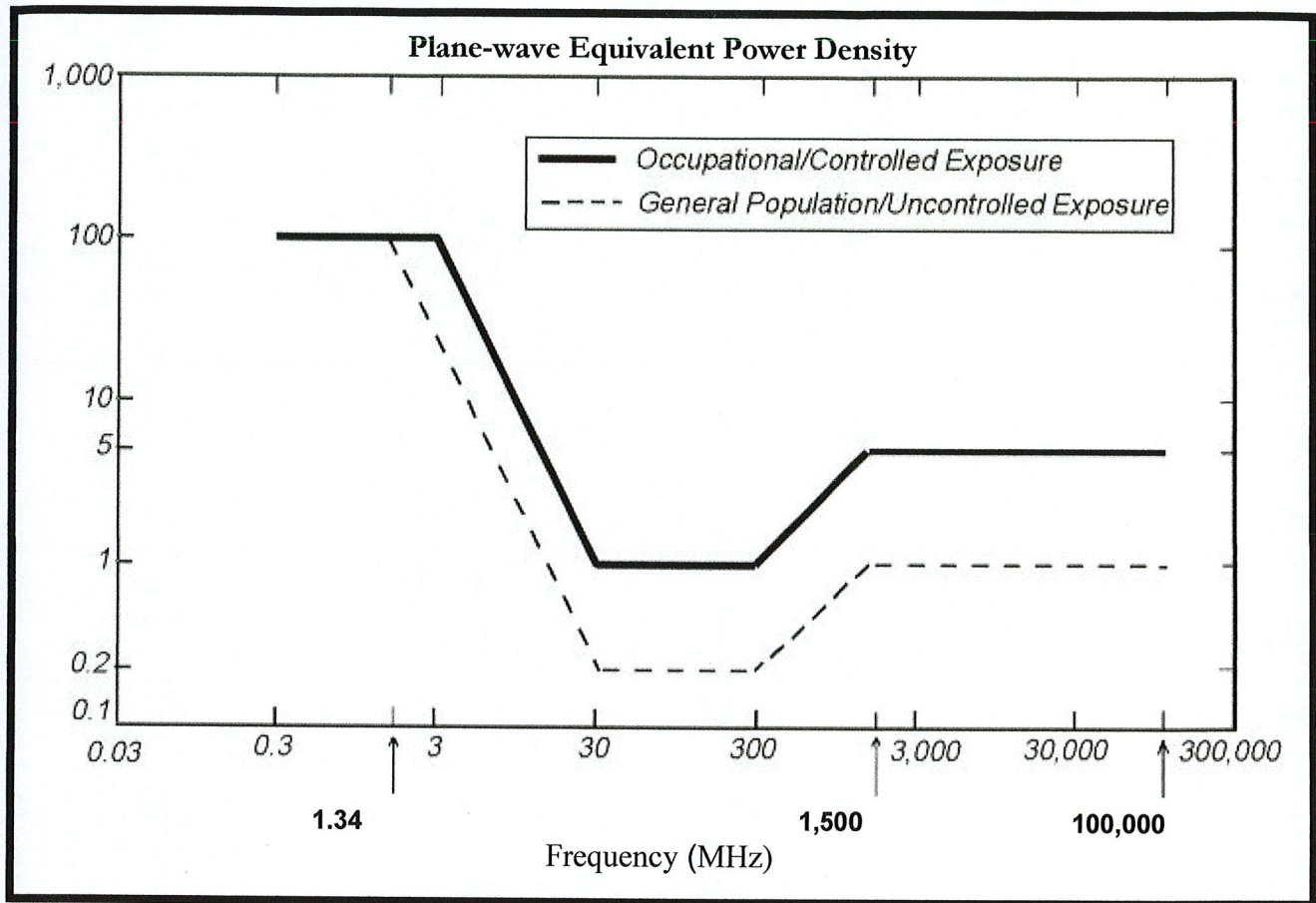
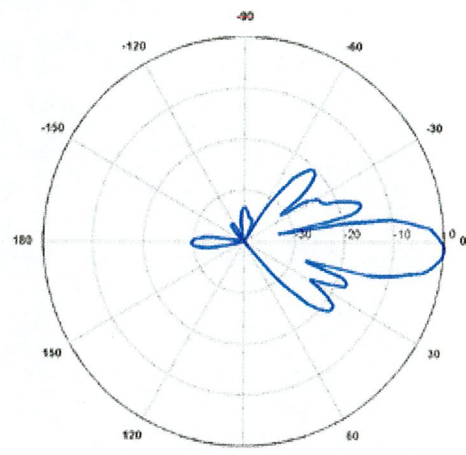
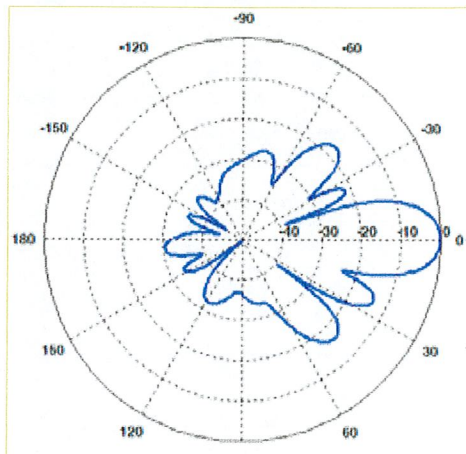


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

<p>700 MHz</p> <p>Manufacturer: KMW Model #: AM-X-CD-16-65-00T-RET Frequency Band: 698-806 MHz Gain: 13.4 dBd Vertical Beamwidth: 12.3° Horizontal Beamwidth: 65° Polarization: Dual Slant $\pm 45^\circ$ Size L x W x D: 72.0" x 11.8" x 5.9"</p>	
<p>850 MHz</p> <p>Manufacturer: Powerwave Model #: 7770.00 Frequency Band: 824-896 MHz Gain: 11.5 dBd Vertical Beamwidth: 15° Horizontal Beamwidth: 82° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 55.0" x 11.0" x 5.0"</p>	
<p>1900 MHz</p> <p>Manufacturer: Powerwave Model #: 7770.00 Frequency Band: 1850-1990 MHz Gain: 13.4 dBd Vertical Beamwidth: 7° Horizontal Beamwidth: 86° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 55.0" x 11.0" x 5.0"</p>	