



Daniel F. Caruso
Chairman

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

Internet: ct.gov/csc

February 7, 2011

Jennifer Young Gaudet
HPC Development LLC
46 Mill Plain Road, 2nd Floor
Danbury, CT 06811

RE: **EM-SprintSpectrum-009-110125** – Sprint Spectrum LP notice of intent to modify an existing telecommunications facility located at 11 Francis J. Clarke Circle, Bethel, Connecticut.

Dear Ms. Gaudet:

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:

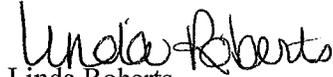
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after 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 January 24, 2011. 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/laf

- c: The Honorable Matthew S. Knickerbocker, First Selectman, Town of Bethel
Steve Palmer, Planning & Zoning Official, Town of Bethel
SBA Inc.

out 1/26



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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Daniel F. Caruso
Chairman

January 26, 2011

The Honorable Matthew S. Knickerbocker
First Selectman
Town of Bethel
1 School Street
Bethel Municipal Center
Bethel, CT 06801-2105

RE: **EM-SPRINTSPECTRUM-009-110125** – Sprint Spectrum LP, notice of intent to modify an existing telecommunications facility located at 11 Francis J. Clarke Circle, Bethel, Connecticut.

Dear First Selectman Knickerbocker:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by February 9, 2011.

Thank you for your cooperation and consideration.

Very truly yours,


Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Steve Palmer, Planning & Zoning Official, Town of Bethel



EM-SPRINTSPECTRUM-009-110125

January 24, 2011

ORIGINAL

RECEIVED
JAN 25 2011

CONNECTICUT
SITING COUNCIL

VIA UPS

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

Re: Sprint Spectrum LP – exempt modification
11 Francis J. Clarke Circle, Bethel, Connecticut

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of Sprint Spectrum LP (“Sprint”). Sprint is making modifications to certain existing sites in its Connecticut system in order to enhance system performance. 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 the Town of Bethel.

Sprint plans to modify the existing facility at 11 Francis J. Clarke Circle, Bethel owned by SBA (coordinates 41-26-36.27 N, 73-25-30.03 W). Attached are a compound plan and tower elevation 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 Sprint’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. The height of the overall structure will be unaffected. Both Sprint’s existing and proposed antenna configuration will AGL. Sprint will replace (3) three of the (9) nine existing antennas and will add one TMA. An additional six coaxial cables will also be installed. The proposed modifications will not extend the height of the tower with appurtenances.
2. The proposed changes will not extend the site boundaries. Sprint will install one additional cabinet on the existing concrete pad within the existing compound. Thus, there will be no effect on the site boundaries.

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 on the attached power density calculation, Sprint's operations at the site will result in a power density of 19.00%; the combined site operations will result in a total power density of 52.96%.

Please feel free to call me at (860) 798-7454 with questions concerning this matter.
Thank you for your consideration.

Respectfully yours,

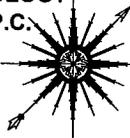


Jennifer Young Gaudet

cc: Honorable Matthew Knickerbocker, First Selectman, Town of Bethel
Costa Stergue (underlying property owner)

Attachments

ALL-POINTS TECHNOLOGY CORPORATION, P.C.
 3 SADDLEBROOK DRIVE
 KILLINGWORTH, CT. 06419
 PHONE: (860)-663-1697
 FAX: (860)-663-0935
 www.allpointstech.com



APT FILING NUMBER: NY-241-400
 LE-1
 SCALE: AS NOTED DRAWN BY: AAJ
 DATE: 10/14/10 CHECKED BY: SMC

Sprint
 Together with NEXTEL
 1 INTERNATIONAL BOULEVARD
 MAHWAH, NJ 07495
 SUITE 800

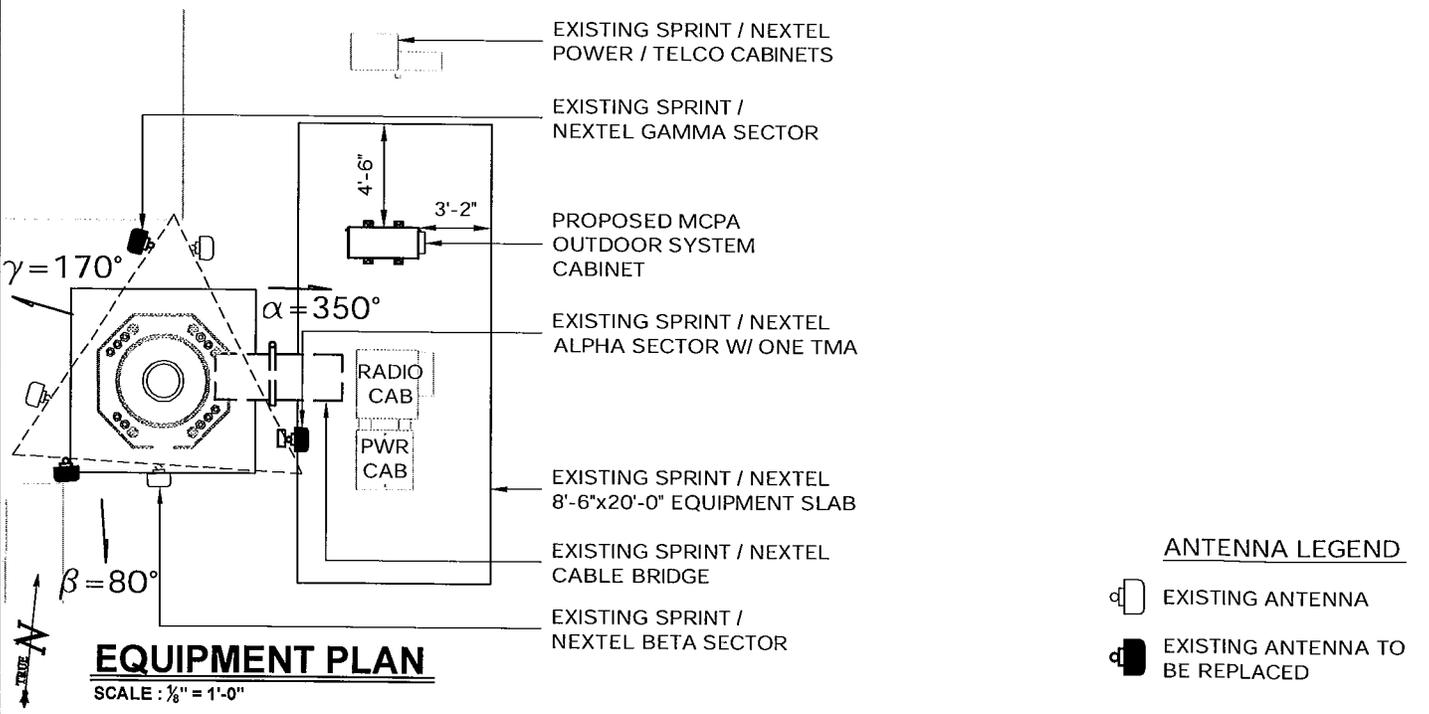
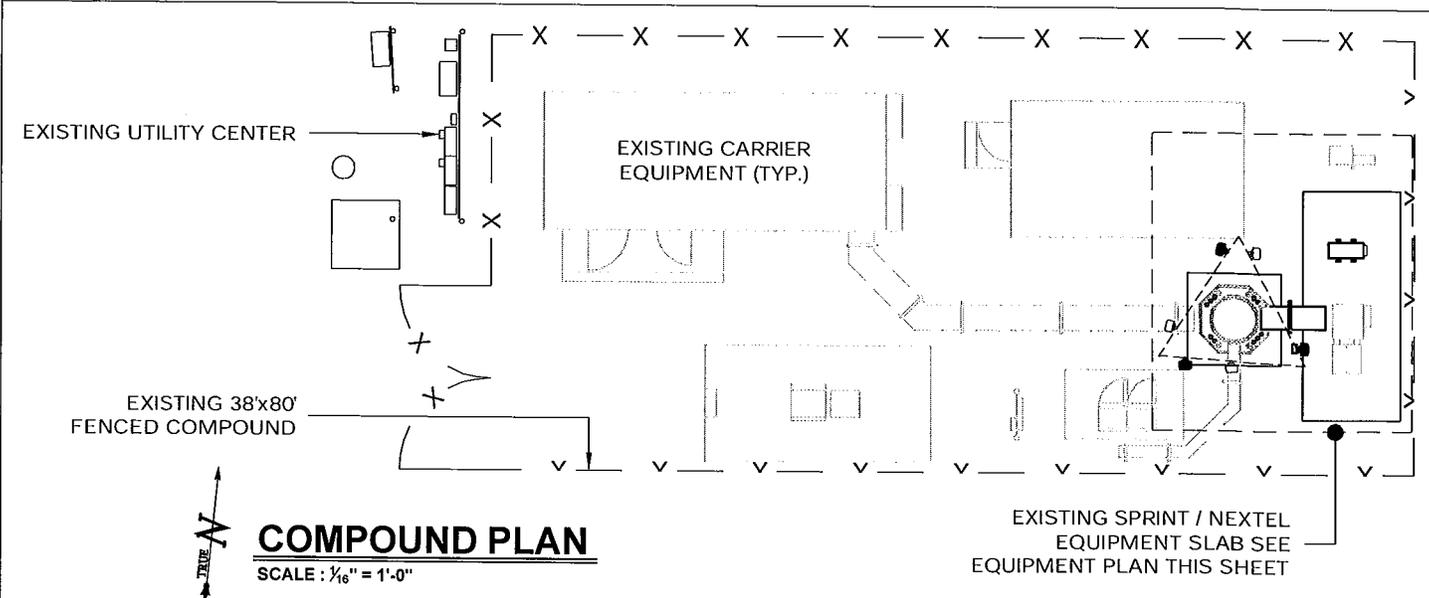
SPRINT / NEXTEL SITE NUMBER: CT23XC521
 BETHEL SBA TOWERS
 11 FRANCIS J CLARKE CIRCLE
 BETHEL, CT 06801

APPROVALS:
 LANDLORD _____ DATE: _____
 RF ENGINEER _____ DATE: _____
 OPERATIONS _____ DATE: _____
 PROJECT MGR _____ DATE: _____

TOTALS:
 - (9) PANELS & (1) GPS ANTENNA
 - SCOPE: REMOVE AND REPLACE 3 PANEL ANTENNAS, ADD (1)TMA AND ONE MCPA OUTDOOR SYSTEM CABINET
 - SQUARE FOOTAGE OF EXISTING LEASE AREA = 175 SF±

NOTICE:

THIS IS A REPRESENTATION OF THE EXISTING STRUCTURE AND PROPOSED MODIFICATIONS. ALL SCALED DIMENSIONS SHOWN ARE NO BETTER THAN APPROXIMATE. FINAL LOCATIONS PENDING FURTHER ENGINEERING ANALYSIS AND DESIGN.



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APT FILING NUMBER: NY-241-400
 LE-2
 SCALE: AS NOTED DRAWN BY: AAJ
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Sprint
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NOTICE:

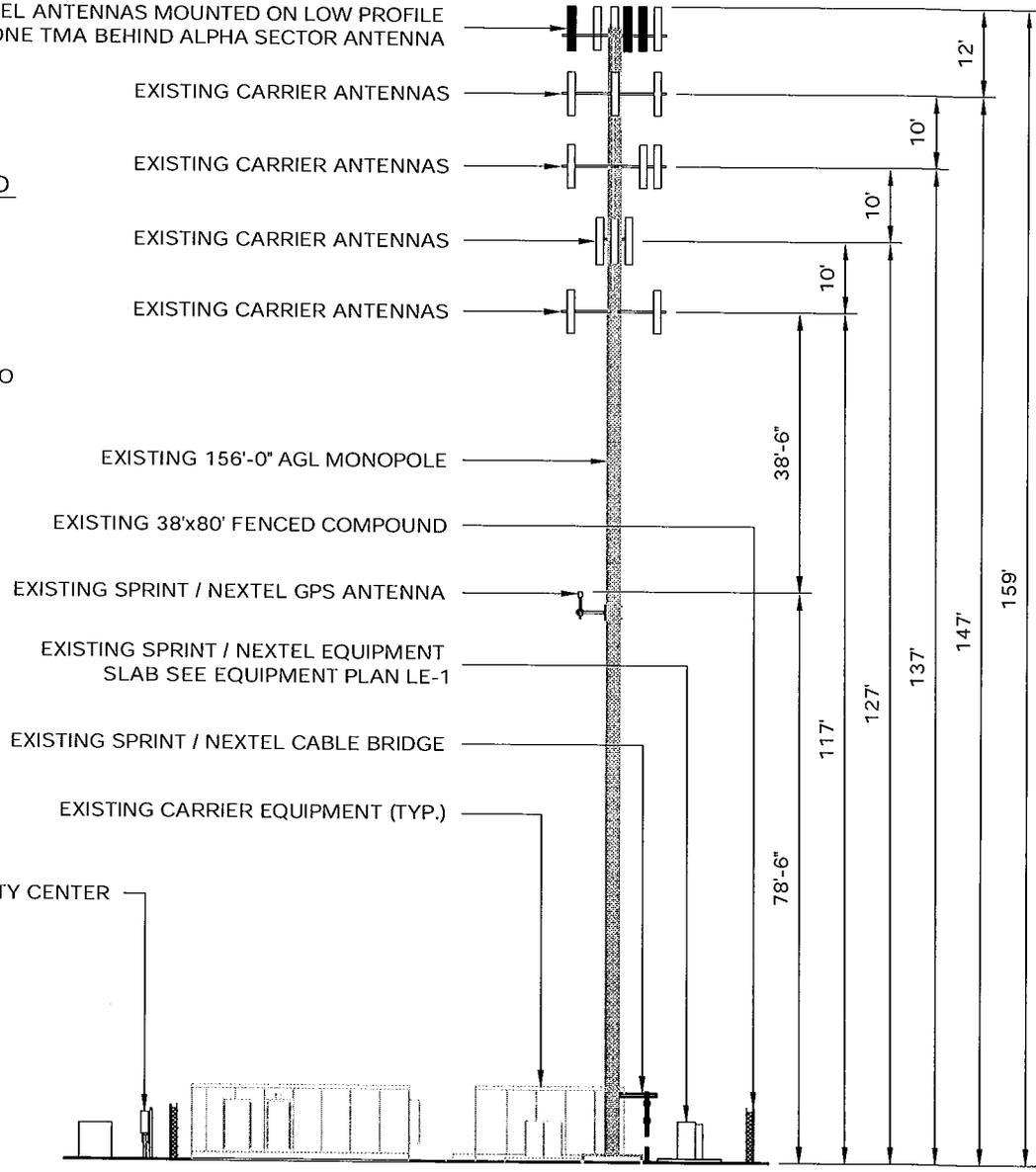
THIS IS A REPRESENTATION OF THE EXISTING STRUCTURE AND PROPOSED MODIFICATIONS. ALL SCALED DIMENSIONS SHOWN ARE NO BETTER THAN APPROXIMATE. FINAL LOCATIONS PENDING FURTHER ENGINEERING ANALYSIS AND DESIGN.

EXISTING SPRINT / NEXTEL ANTENNAS MOUNTED ON LOW PROFILE PLATFORM W/ ONE TMA BEHIND ALPHA SECTOR ANTENNA

- EXISTING CARRIER ANTENNAS
- EXISTING CARRIER ANTENNAS
- EXISTING CARRIER ANTENNAS
- EXISTING CARRIER ANTENNAS

ANTENNA LEGEND

- EXISTING ANTENNA
- EXISTING ANTENNA TO BE REPLACED



NORTHERN ELEVATION

SCALE : 1" = 25'



FDH Engineering, Inc., 2730 Rowland Rd. Raleigh, NC 27615, Ph. 919.755.1012, Fax 919.755.1031

**Structural Analysis for
SBA Network Services, Inc.**

155 ft Monopole

**SBA Site Name: North Bethel
SBA Site ID: CT00248-S**

FDH Project Number 10-10163E S1

Prepared By:

Krystyn Wagner, EI
Project Engineer

Reviewed By:

Christopher M. Murphy, PE
President
CT PE License No. 25842

FDH Engineering, Inc.

2730 Rowland Rd.
Raleigh, NC 27615
(919) 755-1012
info@fdh-inc.com

November 2, 2010



Prepared pursuant to ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas

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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Bethel, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads, pursuant to the *Structural Standard for Antenna Supporting Structures and Antennas, ANSI/TIA-222-G*. Information pertaining to the existing/proposed antenna loading, current tower geometry, and member sizes was obtained from Summit Manufacturing, LLC (Job No. 4071) original design drawings dated October 22, 1998, and SBA Network Services, Inc.

The *basic design wind speed* per the *ANSI/TIA-222-G* standard is 110 mph without ice and 50 mph with 3/4" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the current and proposed antennas from Sprint in place at 157 ft, the tower meets the requirements of the *ANSI/TIA-222-G* standard provided the **Recommendations** below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Summit Job No. 4071), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e. the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *ANSI/TIA-222-G* standard are met with the existing and proposed loading in place, we have the following recommendations:

1. The existing coax should be reused with the proposed loading.
 2. The proposed TMA should be installed directly behind the proposed panel antennas.
-

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from this layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 – Appurtenance Loading

Existing Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines ¹	Carrier	Mount Elevation (ft)	Mount Type
1-11	157	(2) Decibel DB948F85T2E-M (2) Decibel DB980H90E-M (2) Decibel DB980H65E-M (3) Argus LLPX310R (2) Dragonwave A-ANT-23G-2-C Dishes (3) Samsung U-RAS Flexible RRHs	(6) 1-5/8" (6) 5/16" (2) 1/2"	Sprint	157	(1) Low Profile Platform
12-20	147	(9) Decibel DB844H90E-XY	(9) 1-1/4"	Nextel	147	(1) Low Profile Platform
21-32	137	(2) Antel LPA-80080/6CF (2) Antel LPA-80090/4CF (2) Antel LPA-80063/6CF (6) Antel LPA-185090/8CF (1) GPS	(12) 1-5/8" (1) 1/2"	Verizon	137	(1) Low Profile Platform
33-35	127	(3) Powerwave 7770.00 (6) Powerwave LGP21401 TMAs	(9) 1-1/4"	AT&T	127	(3) Standoffs
36-41	117	(3) Kathrein 800-10504 (3) Kathrein 742-351 (6) RETs	(12) 1-5/8" (1) 1/2"	Metro PCS	117	(3) T-Arms

¹ The existing coax is located inside the pole's shaft, unless otherwise noted.

² Sprint's (6) 1-5/8" existing coax are installed outside the monopole shaft in a single row.

³ The loading for Sprint at 157 ft will be altered. See the proposed loading below.

⁴ Metro PCS's (12) 1-5/8" coax are installed double stacked (6-on-6) outside the monopole shaft.

Proposed Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
1-11	157	(2) Decibel DB948F85T2E-M (1) Decibel DB980H90E-M (1) Andrew HBX-6516DS-R2M (2) Andrew HBX-9014DS-R2M (3) Argus LLPX310R (2) Dragonwave A-ANT-23G-2-C Dishes (3) Samsung U-RAS Flexible RRHs (1) Powerwave OS-1991-222W TMA	(6) 1-5/8" (6) 5/16" (2) 1/2"	Sprint	157	(1) Low Profile Platform

¹ This represents the final configuration for Sprint at 157 ft. According to information provided by SBA, Sprint will remove (1) Decibel DB980H90E-M antenna and (2) Decibel DB980H65E-M antennas and install (1) Andrew HBX-6515DS-R2M antenna, (2) Andrew HBX-9014DS-R2M antennas, and (1) Powerwave OS-1991-222W TMA.

RESULTS

Based on information obtained from the original design drawings, the yield strength of steel for individual members was as follows:

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	50 ksi
Anchor Bolts	75 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

Table 3 – Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	155 - 120	Pole	TP26x16.5x0.1875	67.5	Pass
L2	120 - 89.5	Pole	TP33.91x24.7429x0.3125	62.2	Pass
L3	89.5 - 44	Pole	TP45.64x32.1306x0.375	69.8	Pass
L4	44 - 0	Pole	TP56.83x43.3286x0.375	83.0	Pass
		Anchor Bolts	(20) 2.25" ϕ bolts on a 64" BC	62.4	Pass
		Base Plate	2.75" thick x 64" square	66.5	Pass

Table 4 – Maximum Base Reactions

Base Reactions	Current Analysis* (ANSI/TIA-222-G)	Original Design (TIA/EIA-222-F)
Axial	43 k	39 k
Shear	41 k	32 k
Moment	4,157 k-ft	3,850 k-ft

* Current analysis reactions are within an allowable factor of 1.35 when the original design reactions are based on an allowable stress design per ANSI/TIA-222-G.

GENERAL COMMENTS

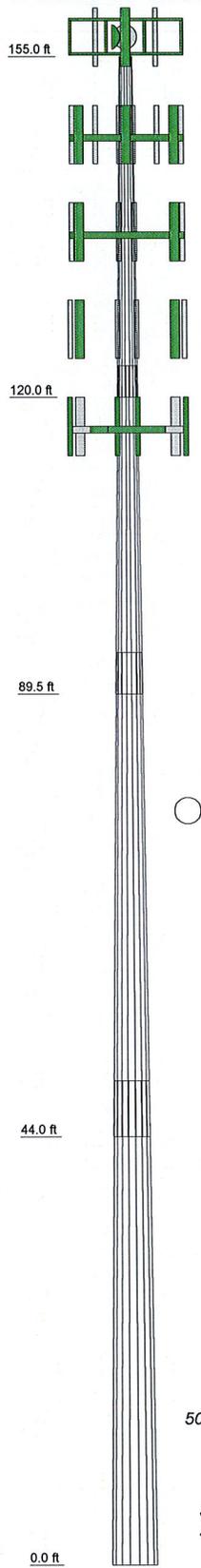
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX

Section	1	2	3	4	
Length (ft)	35.00	33.75	49.75	49.75	
Number of Sides	18	18	18	18	
Thickness (in)	0.1875	0.3125	0.3750	0.3750	
Socket Length (ft)	3.25	4.25	5.75		
Top Dia (in)	16.5000	24.7429	32.1306	43.3286	
Bot Dia (in)	26.0000	33.9100	45.8400	56.8300	
Grade		A607-65			
Weight (K)	1.5	3.3	7.8	10.0	22.6



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DB948F85T2E-M w/Mount Pipe (Sprint)	157	(2) Antel LPA-80063/6CF w/ Mount Pipe	137
DB948F85T2E-M w/Mount Pipe (Sprint)	157	GPS (Verizon)	137
Andrew HBX-9014DS-R2M w/ Mount Pipe (Sprint)	157	(2) LPA-185090/8 w/Mount Pipe (Verizon)	137
DB980H90E-M w/Mount Pipe (Sprint)	157	(2) LPA-185090/8 w/Mount Pipe (Verizon)	137
Andrew HBX-6516DS-R2M w/ Mount Pipe (Sprint)	157	4' Side Mount Standoff (1) (ATI)	127
Andrew HBX-9014DS-R2M w/ Mount Pipe (Sprint)	157	4' Side Mount Standoff (1) (ATI)	127
Andrew HBX-9014DS-R2M w/ Mount Pipe (Sprint)	157	4' Side Mount Standoff (1) (ATI)	127
Argus LLPX310R w/ Mount Pipe (Sprint)	157	Powerwave 7770 w/ Mount Pipe (ATI)	127
Argus LLPX310R w/ Mount Pipe (Sprint)	157	Powerwave 7770 w/ Mount Pipe (ATI)	127
Argus LLPX310R w/ Mount Pipe (Sprint)	157	(2) TMA - Powerwave LGP21401 (ATI)	127
U-RAS Flexible RRH (Sprint)	157	(2) TMA - Powerwave LGP21401 (ATI)	127
U-RAS Flexible RRH (Sprint)	157	(2) TMA - Powerwave LGP21401 (ATI)	127
U-RAS Flexible RRH (Sprint)	157	Kathrein 742-351 w/ Mount Pipe (Metro PCS)	117
TMA - Powerwave OS-1991-222W (Sprint)	157	Kathrein 742-351 w/ Mount Pipe (Metro PCS)	117
13' Low Profile Platform (Sprint)	157	Kathrein 742-351 w/ Mount Pipe (Metro PCS)	117
Dragonwave A-ANT-23G-2-C (Sprint)	157	Kathrein 742-351 w/ Mount Pipe (Metro PCS)	117
Dragonwave A-ANT-23G-2-C (Sprint)	157	(2) RET (Metro PCS)	117
(3) DB844H90E-XY w/Mount Pipe (Nextel)	147	(2) RET (Metro PCS)	117
13' Low Profile Platform (Nextel)	147	(2) RET (Metro PCS)	117
(3) DB844H90E-XY w/Mount Pipe (Nextel)	147	T-Arm (Metro PCS)	117
(3) DB844H90E-XY w/Mount Pipe (Nextel)	147	T-Arm (Metro PCS)	117
(3) DB844H90E-XY w/Mount Pipe (Nextel)	147	T-Arm (Metro PCS)	117
(2) LPA-185090/8 w/Mount Pipe (Verizon)	137	Kathrein 800-10504 w/ Mount Pipe (Metro PCS)	117
13' Low Profile Platform (Verizon)	137	Kathrein 800-10504 w/ Mount Pipe (Metro PCS)	117
(2) Antel LPA-80080/6cf w/ Mount Pipe	137	Kathrein 800-10504 w/ Mount Pipe (Metro PCS)	117
(2) LPA-80090/4CF w/Mount Pipe	137		

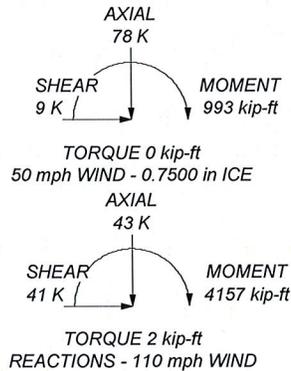
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 110 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 83%

ALL REACTIONS ARE FACTORED



	FDH Engineering, Inc. 2730 Rowland Road Raleigh, North Carolina Phone: (919) 755-1012 FAX: (919) 755-1031		Job: North Bethel CT00248-S Project: 10-10163E S1	
	Client: SBA Code: TIA-222-G Path:	Drawn by: Krystyn Wagner Date: 11/02/10	App'd: Scale: NTS Dwg No. E-1	



C Squared Systems, LLC
920 Candia Road
Manchester, NH 03109
Phone: (603) 657 9702
support@csquaredsystems.com

Calculated Radio Frequency Emissions



CT33XC521

11 Francis J Clarke Circle, Bethel, CT 06801

January 13, 2011

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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 Sprint PCS antenna arrays mounted on the existing monopole tower located at 11 Francis J Clarke Circle in Bethel, CT. Sprint-Nextel, MetroPCS, AT&T, Verizon Wireless all have antennas mounted on the tower. The coordinates of the tower are 41-21-36.33 N, 73-25-30.09 W.

Sprint PCS is proposing the following modifications:

- 1) Remove one Andrew DB980H90E-M panel antenna;
- 2) Remove two Andrew DB980H65E-M panel antennas;
- 3) Install one Andrew HBX-6516DS-R2M panel antenna;
- 4) Install two Andrew HBX-9014DS-R2M panel antennas;
- 5) Install one tower mounted amplifier;
- 6) Install a multi-carrier power amplifier (MCPA) system on the existing Sprint equipment pad.

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:

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

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

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. 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. All information for carriers other than Sprint PCS came directly from the current CSC database.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	%MPE
AT&T	127	880	4	296	0.0264	0.5867	4.50%
AT&T	127	1900	2	427	0.0190	1.0000	1.90%
AT&T	127	880	1	500	0.0111	0.5867	1.90%
AT&T	127	1900	1	500	0.0111	1.0000	1.11%
MetroPCS	117	2140	3	444	0.0350	1.0000	3.50%
Verizon	137	880	9	285	0.0491	0.5867	8.38%
Verizon	137	1900	3	400	0.0230	1.0000	2.30%
Nextel	146	851	24	100	0.0405	0.5673	7.14%
Clearwire	157	2496	2	153	0.0045	1.0000	0.45%
Clearwire	157	11000	1	211	0.0031	1.0000	0.31%
Sprint-Nextel WiMAX	157	2657	3	562	0.0246	1.0000	2.46%
Sprint-Nextel Microwave	157	22500	2	4	0.0001	1.0000	0.01%
Sprint-Nextel Microwave	157	22500	2	4	0.0001	1.0000	0.01%
Sprint PCS	157	1900	11	1184	0.1900	1.0000	19.00%
						Total	52.96%

Table 1: Carrier Information

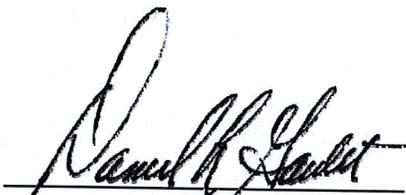
5. Conclusion

The above analysis verifies that emissions from the existing site will be well 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 and existing transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 52.96% of the FCC limit.

As noted in the introduction, 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.



Daniel L. Goulet
C Squared Systems, LLC

January 13, 2011

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 Exposure¹

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 Exposure²

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)

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

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

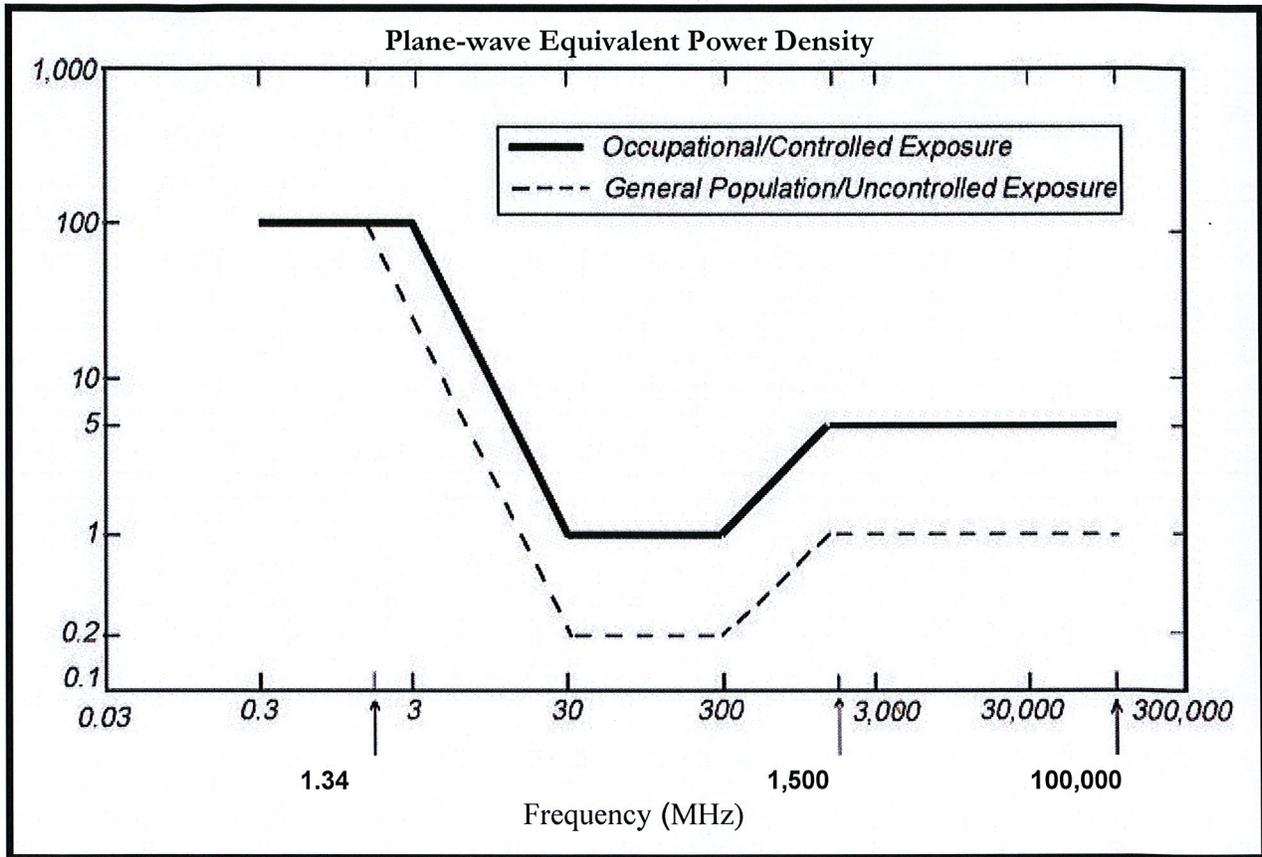


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)