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

October 9, 2012

Rick Woods
SBA Communications Corporation
One Research Dr. Suite 200C
Westborough, MA 01581

RE: **EM-SPRINT-143-120907** – Sprint Spectrum notice of intent to modify an existing telecommunications facility located at 1925-1931 East Main Street, Torrington, Connecticut.

Dear Mr. Woods:

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 and accessory equipment shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by FDH Engineering dated May 10, 2012 and stamped by Christopher Murphy;
- Following the installation of the proposed equipment, Sprint shall provide documentation certifying that the installation complied with the engineer's recommendation;
- 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 September 6, 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.

CSC
CONNECTICUT SITING COUNCIL

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,

LRoberts

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Ryan J. Bingham, Mayor, City of Torrington
Martin Connor, City Planner, City of Torrington
Sean Gormley, SBA

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
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E-Mail: siting.council@ct.gov
www.ct.gov/csc

September 17, 2012

The Honorable Ryan J. Bingham
Mayor
City of Torrington
Municipal Building
140 Main Street
Torrington, CT 06790-5245

RE: **EM-SPRINT-143-120907** – Sprint Spectrum notice of intent to modify an existing telecommunications facility located at 1925-1931 East Main Street, Torrington, Connecticut.

Dear Mayor Bingham:

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 October 1, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Martin Connor, City Planner, City of Torrington

CSC
CONNECTICUT SITING COUNCIL

September 6, 2012

EM-SPRINT-143-120907

David Martin and
Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
1925-1931 East Main Street
Torrington, CT 06790
N 41 ° 49' 23.90"
W 73 ° 04' 36.28"

Dear Mr. Martin and Members of the Siting Council:

On behalf of Sprint Spectrum, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 1925-1931 East Main St. Torrington, CT.

The 1925-1931 East Main St. facility consists of a 153' Monopole Tower owned and operated by SBA Communications. In order to accommodate technological changes and enhance system performance in the State of Connecticut, Sprint Spectrum plans to modify the equipment configurations at many of its existing cell 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 chief elected official of the municipality in which the affected cell site is located.

As part of Sprint's Network Vision modification project, Sprint desires to upgrade their equipment to meet the new standards of 4G technology. The new antennas and associated equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna and equipment configuration along with the required fee of $625.

The changes to the facility do not constitute modifications 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 or altered. 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 overall height of the structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than the new equipment cabinets.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. The changes in radio frequency power density 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.

For the foregoing reasons, SBA Communications on behalf of Sprint Spectrum, respectfully submits that he proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to cal me at (508) 614-0389 with any questions you may have concerning this matter.

Thank you,

Rick Woods
SBA Communications Corporation
One Research Dr. Suite 200C
Westborough, MA 01581
508-366-5505 x 319 + T
508-366-5507 + F
508-614-0389 + C
rwoods@sbasite.com

Sprint Spectrum
Equipment Modification

1925-1931 East Main St. Torrington, CT
Site number CT33XC112

Tower Owner: SBA Communications Corporation

Equipment Configuration: Monopole Tower

Current and/or approved:
Six (6) CDMA Antennas @ 153'
Six (6) lines of 1-5/8" coax
One (1) TMA
Two (2) equipment cabinets

Planned Modifications:
Remove Six (6) CDMA antennas, Six (6) lines of 1-5/8", & 1 TMA
Install Three (3) Network Vision antennas & Six (6) RRHs @ 195'
Install Three (3) Hybriflex fiber cables
Install Three (3) Filters
Install Four (4) RETs
Install One (1) Fiber Distribution Box
Replacing Two (2) equipment cabinets with Three (3) new equipment cabinets

Structural Information:

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed modifications.

Power Density:

The anticipated Maximum Composite contributions from the Sprint facility are 17.905% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 70.945% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
Sprint	17.905%
Nextel	2.790%
T-Mobile	2.390%
Verizon Wireless	18.600%
Pocket	9.420%
Town	5.000%
AT&T	14.840%
Total Site MPE %	70.945%

September 6, 2012

Mayor Ryan Bingham
City of Torrington
40 Main St.
Torrington, CT 06790

RE: Telecommunications Facility-1925-1931 East Main St. Torrington, CT 06790

Dear Mayor Bingham,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, Sprint Spectrum will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review Sprint's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Sprint's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (508) 614-0389.

Thank you,

Rick Woods
SBA Communications Company
One Research Dr. Suite 200C
Westborough, MA 01581
508-366-5505 x 319 + T
508-366-5507 + F
508-614-0389 + C
rwoods@sbasite.com

STRUCTURAL NOTE:

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS AND RRH MOUNTS COMPLETED BY HUDSON DESIGN GROUP LLC ON BEHALF OF ALCATEL–LUCENT ARE INCLUSIVE OF THE ENTIRE ANTENNA FRAME/PLATFORM/ANTENNA/RRH MOUNTS SECURED TO THE TOWER STRUCTURE.

STRUCTURAL NOTE:

G.C. TO REFER TO SPECIAL INSTALLATION REQUIREMENTS AND/OR MODIFICATIONS RECOMMENDED IN STRUCTURAL ANALYSIS REPORT PREPARED BY FDH ENGINEERING, INC. DATED: MAY 10, 2012

Sprint® VISION™

NOTE:

OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AN EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS–BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL REPRESENTATION OF THE EQUIPMENT LOCATED WITHIN THE SITE CONTAINED IN THESE OTHER DOCUMENTS IS ILLUSTRATIVE ONLY, AND DOES NOT LIMIT THE RIGHTS OF SPRINT AS PROVIDED FOR IN THE AGREEMENT. THE LOCATIONS OF ANY ACCESS AND UTILITY EASEMENTS ARE ILLUSTRATIVE ONLY. ACTUAL LOCATIONS MAY BE DETERMINED BY TENANT AND/OR THE SERVICING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

SITE NUMBER:
CT33XC112

SITE NAME:
CALLICOON 3/SBA TOWERS, INC

SITE ADDRESS:
1925-1931 EAST MAIN STREET
TORRINGTON, CT 06790

SBA SITE #: CT01499-S
SBA SITE NAME: TORRINGTON

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

SBA
SBA COMMUNICATIONS CORP.
5900 BROKEN SOUND PARKWAY
BOCA RATON, FL 33487-2797
TEL: (561) 226-9523
FAX: (561) 226-3572

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

SITE INFORMATION

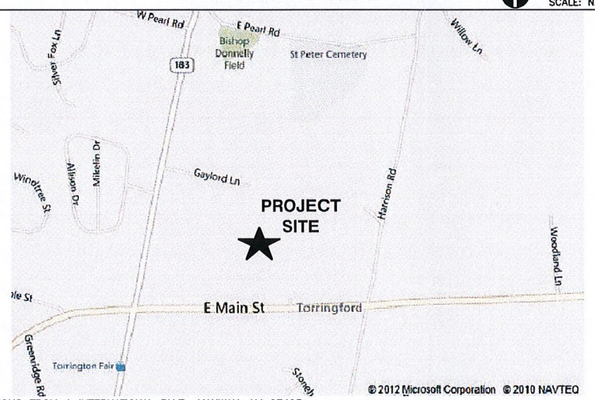
SITE NUMBER:	CT33XC112	LOCAL POWER COMPANY:	CONNECTICUT LIGHT & POWER
SITE NAME:	CALLICOON 3/SBA TOWERS, INC	LOCAL TELCO COMPANY:	VERIZON
SITE ADDRESS:	1925-1931 EAST MAIN STREET TORRINGTON, CT 06790	APPLICANT:	SPRINT 1 INTERNATIONAL BLVD, SUITE 800 MAHWAH, NJ 07495
COUNTY:	LITCHFIELD	APPLICANT REPRESENTATIVE:	ALCATEL-LUCENT TODD AMANN 600 MOUNTAIN AVE. MURRAY HILL, NJ 07974 (914)715-9363
ZONING:	LB - LOCAL BUSINESS	SITE ACQUISITION CONSULTANT:	SBA COMMUNICATIONS CORP. ONE RESEARCH DRIVE SUITE 200C WESTBOROUGH, MA 01581
PARCEL ID:	MAP: 12-7; LOT:006	A&E CONSULTANT:	HUDSON DESIGN GROUP LLC 1600 OSGOOD STREET BLDG 20 NORTH, SUITE 2-101 NORTH ANDOVER, MA 01845 TEL: (978) 557-5553 FAX: (978) 336-5586
COORDINATES(*):	N 41° 49' 23.9016" W 73° 04' 36.2886"		
GROUND ELEV.(*):	1093'± (AMSL)		
STRUCTURE TYPE:	MONOPOLE		
STRUCTURE HEIGHT:	153' (AGL)		
ANTENNA RAD CENTER (**):	150.4' (AGL)		
PROPERTY OWNER:	TEP INC. P.O. BOX 876 TORRINGTON, CT 06790		
STRUCTURE OWNER:	SBA TOWERS, LLC 5900 BROKEN SOUND PKWY BOCA RATON, FL 33487		

(*) SOURCE OF COORDINATES/ELEVATION - SBA AND 2C DONE BY ERDMAN ANTHONY CONSULTING ENGINEERS.

(**) NOTE: NETWORK VISION ANTENNA RADIATION CENTERLINE AGL (FEET) BASED ON SBA EQUIPMENT DATABASE AND SBA TOWER STRUCTURAL ANALYSIS AND WILL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM ALU/SPRINT DATABASE.

VICINITY MAP

TRUE NORTH
SCALE: N.T.S.



DIRECTIONS FROM 1 INTERNATIONAL BLVD. MAHWAH, NJ 07495:

HEAD SOUTH ON INTERNATIONAL BLVD TOWARD AVE OF AMERICAS. TURN RIGHT ONTO PARK LN. CONTINUE STRAIGHT ONTO LEISURE LN. SLIGHT RIGHT ONTO NJ–17 N. MERGE ONTO I–287 N/NJ–17 N VIA THE RAMP ON THE LEFT TO I–87/N Y. THRUWAY ENTERING NEW YORK. THRUWAY AND MERGE ONTO I–287 E/I–87 N. CONTINUE TO FOLLOW I–87 N. TAKE EXIT 8A FOR NY–119/SAW MILL PKWY N TOWARD ELMSFORD. KEEP LEFT AT THE FORK AND MERGE ONTO SAW MILL PKWY N. TAKE THE EXIT TOWARD I–684 N. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I–684/BREWSTER AND MERGE ONTO I–684 N. TAKE EXIT 9E FOR INTERSTATE 84 E TOWARD DANBURY. MERGE ONTO I–84 E. ENTERING CONNECTICUT. SLIGHT RIGHT TO STAY ON I–84 E. TAKE EXIT 20 ON THE LEFT TO MERGE ONTO CT–8 N TOWARD TORRINGTON. CONTINUE ONTO US–6 E. CONTINUE ONTO CT–8 N. TAKE EXIT 44 FOR US–202 TOWARD DOWNTOWN TORRINGTON. TURN RIGHT ONTO US–202 E/E MAIN ST. DESTINATION WILL BE ON THE LEFT.

SHEET INDEX

SHEET NO.	DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES
A-1	COMPOUND PLAN AND ELEVATION
A-2	ANTENNA SCENARIO & EQUIPMENT LAYOUT
A-3	DETAILS
A-4	RF DATA SHEET
A-5	CABINET & ANTENNA WIRING DIAGRAM
S-1	STRUCTURAL DETAILS
E-1	TYPICAL POWER & GROUNDING ONE LINE DIAGRAM

GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
   -HANDICAPPED ACCESS NOT REQUIRED
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENT
   ELECTRICAL CODE: 2005 NATIONAL ELECTRICAL CODE
   STRUCTURAL CODE: TIA/EIA-222-F STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS

SCOPE OF WORK

1. REPLACE EXISTING MOD CELL & BOOSTER WITH (1) MM-BTS CABINET & INSTALL FIBER DISTRIBUTION BOX WITHIN EXISTING LEASE AREA. REPLACE EXISTING BATTERY CABINET WITH (2) BBU CABINETS.
2. REMOVE (6) EXISTING CDMA ANTENNAS AND REPLACE WITH (3) NETWORK VISION ANTENNAS & (6) RRH'S.
3. REMOVE EXISTING CDMA COAX CABLES & INSTALL (3) HYBRIFLEX CABLES FROM EQUIPMENT CABINET TO ANTENNA
4. REMOVE EXISTING GPS ANTENNA AND REPLACE WITH NEW GPS ANTENNA

CALL BEFORE YOU DIG
1-800-922-4455 OR DIAL 811

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CONSTRUCTION: _____ DATE: _____

LEASING/ SITE ACQUISITION: _____ DATE: _____

RF ENGINEER: _____ DATE: _____

LANDLORD/ PROPERTY OWNER: **APPROVED** DATE: _____

By Bryan Bakis, P.E. for SBA Communications Corp. at 7:45 am, Jul 27, 2012

CHECKED BY: KB

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	06/07/12	FOR CONSTRUCTION	DB
1	04/06/12	ISSUED FOR REVIEW	RH

SITE NUMBER:
CT33XC112
SITE NAME:
CALLICOON 3/SBA TOWERS, INC
SITE ADDRESS:
1925–1931 EAST MAIN STREET
TORRINGTON, CT 06790

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T–1

STRUCTURAL NOTE:

G.C. TO REFER TO SPECIAL INSTALLATION REQUIREMENTS AND/OR MODIFICATIONS RECOMMENDED IN STRUCTURAL ANALYSIS REPORT PREPARED BY FDH ENGINEERING, INC. DATED: MAY 10, 2012

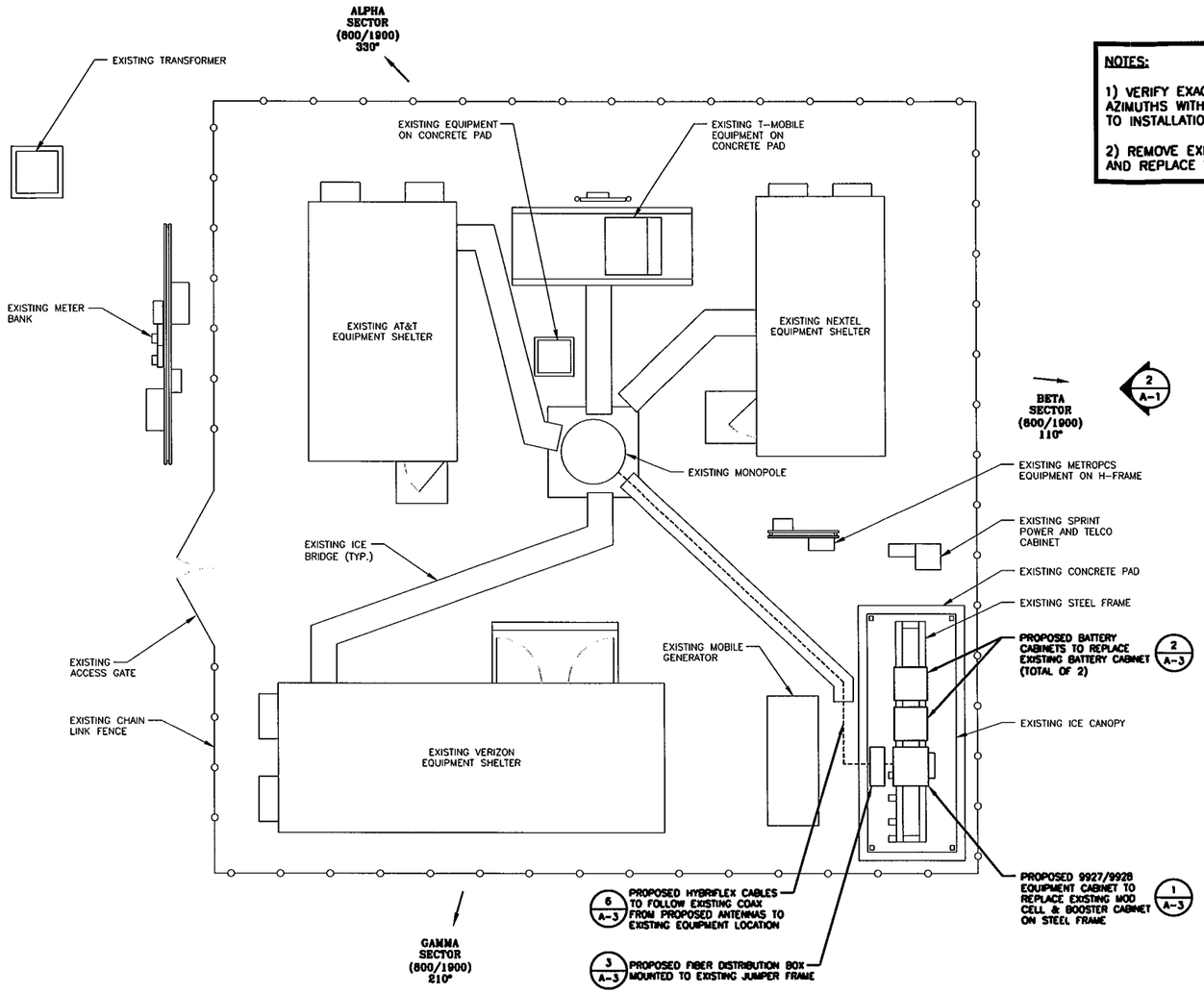
ANTENNA CONFIGURATION NOTES:

PER THE MLA BETWEEN SPRINT AND SBA, ALL EXISTING NEXTEL EQUIPMENT MUST BE REMOVED WITHIN 6 MONTHS UNLESS OTHERWISE NOTED.

NOTES:

1) VERIFY EXACT ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

2) REMOVE EXISTING GPS ANTENNA AND REPLACE WITH NEW GPS ANTENNA.

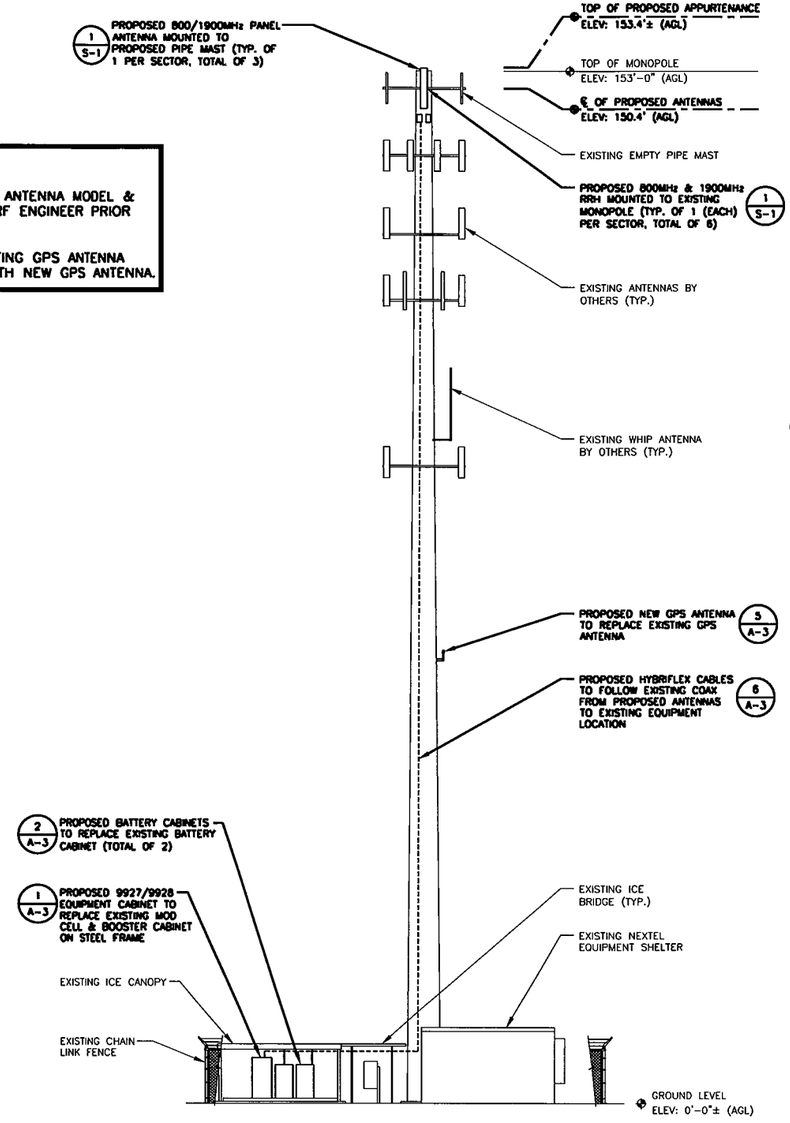


COMPOUND PLAN

1/A-1

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

GRAPHIC SCALE 0 2'-8" 5'-4" 10'-8" 16'-0"



EAST ELEVATION

2/A-1

SCALE: 3/32"=1'-0"

GRAPHIC SCALE 0 5'-4" 10'-8" 21'-4" 32'-0"

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

SBA
SBA COMMUNICATIONS CORP.
5900 BROKEN SOUND PARKWAY TEL: (561) 226-9523
BOCA RATON, FL 33487-2797 FAX:(561) 226-3572

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101 TEL: (978) 557-5553
N. ANDOVER, MA 01845 FAX: (978) 336-5586

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY:	KB
APPROVED BY:	DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	06/07/12	FOR CONSTRUCTION	DB
1	04/06/12	ISSUED FOR REVIEW	RH

SITE NUMBER:
CT33XC112

SITE NAME:
CALLICOON 3/SBA TOWERS, INC

SITE ADDRESS:
1925-1931 EAST MAIN STREET
TORRINGTON, CT 06790

SHEET TITLE
COMPOUND PLAN AND ELEVATION

SHEET NUMBER
A-1

FDH Engineering, Inc., 6521 Meridien Drive, Raleigh, NC 27616, Ph. 919.755.1012, Fax 919.755.1031

Structural Analysis for SBA Network Services, Inc.

153' Monopole Tower

SBA Site Name: Torrington
SBA Site ID: CT01499-S
Sprint Site ID: CT33XC112
Sprint Site Name: Callicoon 3

FDH Project Number 12-04781E S1

Analysis Results

Tower Components	80.8%	Sufficient
Foundation	82.4%	Sufficient

Prepared By:

Gregory C. Clutter
Project Engineer

Reviewed By:

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

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com

May 10, 2012

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 Connecticut Building code

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Torrington, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F and 2005 Connecticut Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, foundation dimensions, and member sizes was obtained from:

- Fred A. Nudd Corporation (Project No. 7783) original design drawings dated August 18, 2000
- Vertical Structures, Inc. (Job No. 2003-007-015) structural analysis and modification drawings dated September 9, 2003
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards & 2005 Connecticut Building Code is 80 mph without ice and 28 mph with 1" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from Sprint in place at 153 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and 2005 Connecticut Building Code provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Fred A. Nudd Project No. 7783), 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 *TIA/EIA-222-F* standards and 2005 Connecticut Building Code are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed coax should be installed inside the pole's shaft.
2. RRU/RRH stipulation: the proposed equipment may be installed in any arrangement as determined by the client.

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 the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Coax and Lines[1]	Carrier	Mount Elevation (ft)	Mount Type
153	(6) Andrew HBX-9014DS-R2M w/ Mount Pipe (1) Powerwave OS-1991-22W TMA	(6) 1 5/8	Sprint	153	(1) Low Profile Platform
143	(12) Decibel DB844H90E-XY w/Mount Pipe	(12) 1 1/4	Nextel	143	(1) Low Profile Platform
133	(6) EMS RR90-17-02DP w/Mount Pipe	(12) 1 5/8	T-Mobile	133	(1) Low Profile Platform
123	(6) Decibel DB950F65E-M w/Mount Pipe (6) Antel LPA-80063/6CF w/ Mount Pipe	(12) 1 5/8	Verizon	123	(1) Low Profile Platform
110	(1) 10' Omni	(1) 1/2"	Torrington PD	105	(1) Standoff
95	(3) CSS DUO1417-8686 w/Mount Pipe (6) Powerwave 7770 w/ Mount Pipe (6) Powerwave LGP17201 TMAs (6) Powerwave LGP21903 Diplexers	(12) 1 5/8 [2]	Cingular	95	(1) Low Profile Platform
85	(3) RFS APXV18-206517S-C w/ Mount Pipe	(6) 1 5/8 [3]	Pocket	85	Flush Mount
70	(1) GPS	(1) 1/2		70	(1) Standoff

1. The existing coax are located inside the pole's shaft, unless otherwise noted
2. Cingular's coax to 95 ft are installed outside the pole's shaft in a single row
3. Pocket's coax to 85 ft are installed outside the pole's shaft in a single row

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
153	(3) RFS APXVSPP18-C-A20 w/Mount Pipe (3) ALU 1900 MHz RRUs (3) ALU 800 MHz RRUs (3) ALU 800 MHz Filters (4) RFS ACU-A20-N RETs	(3) 1-1/4"	Sprint	153	(1) Low Profile Platform

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Flange Plate	50 ksi
Flange Bolts	Fu = 125 ksi
Base Plate	50 ksi
Anchor Bolts	Fu = 125 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. *Note: Capacities up to 105% are considered acceptable.* **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	153 - 150	Pole	TP26.25x24x0.25	1.9	Pass
		Flange Bolts	(18) 1/2" Φ w/ 27" BC	7.4	Pass
		Flange Plate	30" Φ x 1/2" thk.	3.8	Pass
L2	150 - 110	Pole	TP35.25x26.25x0.25	34.4	Pass
L3	110 - 65	Pole	TP45.375x33.625x0.3125	59.5	Pass
L4	65 - 21	Pole	TP55.275x43.34x0.3125	80.8	Pass
L5	21 - 0	Pole	TP60x52.9791x0.375	70.0	Pass
		Anchor Bolts	(18) 2" Φ w/ 67" BC	68.7	Pass
		Base Plate	73" Φ x 1.5" thk. PL w/ stiffeners	54.5	Pass

*Capacities include a 1/3 allowable increase for wind.

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis *(TIA/EIA-222-F)*	Original Design *(TIA/EIA-222-F)*
Axial	41 k	---
Shear	29 k	31 k
Moment	3,041 k	3,692 k

GENERAL COMMENTS

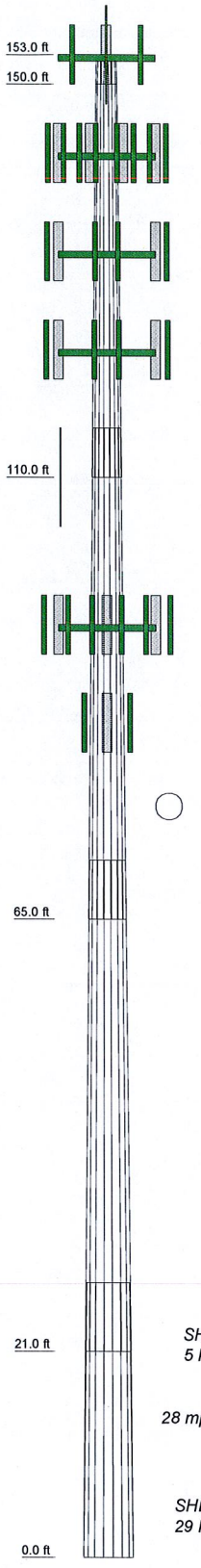
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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	5
Length (ft)	3.00	40.00	50.00	50.00	28.00
Number of Sides	18	18	18	18	18
Thickness (in)	0.2500	0.2500	0.3125	0.3125	0.3750
Socket Length (ft)		5.00	6.00	7.00	
Top Dia (in)	24.0000	26.2500	33.6250	43.3400	52.9791
Bot Dia (in)	26.2500	35.2500	45.3750	55.2750	60.0000
Grade			A572-65		
Weight (K)	0.2	3.3	6.6	8.3	6.4



AXIAL
69 K
SHEAR
5 K
MOMENT
535 kip-ft
TORQUE 0 kip-ft
28 mph WIND - 1.0000 in ICE
AXIAL
41 K
SHEAR
29 K
MOMENT
3041 kip-ft
TORQUE 1 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(1) Low Profile Platform (Sprint)	153	(2) DB950F65E-M w/Mount Pipe (Verizon)	123
Lightning Rod	153	(2) DB950F65E-M w/Mount Pipe (Verizon)	123
(2) Empty Pipe Mount	153	(2) DB950F65E-M w/Mount Pipe (Verizon)	123
(2) Empty Pipe Mount	153	(1) Low Profile Platform (Verizon)	123
(2) Empty Pipe Mount	153	10' whip (Torrington PD)	105
RFS APXVSPP18-C-A20 w/Mount Pipe (Sprint)	153	(1) Standoff (Torrington PD)	105
RFS APXVSPP18-C-A20 w/Mount Pipe (Sprint)	153	(2) Diplexer - Powerwave LGP21903 (Cingular)	95
RFS APXVSPP18-C-A20 w/Mount Pipe (Sprint)	153	(2) Diplexer - Powerwave LGP21903 (Cingular)	95
ALU 1900 RRU (Sprint)	153	(2) Diplexer - Powerwave LGP21903 (Cingular)	95
ALU 1900 RRU (Sprint)	153	(1) Low Profile Platform (Cingular)	95
ALU 1900 RRU (Sprint)	153	(2) TMA - Powerwave LGP17201 (Cingular)	95
ALU 800 RRU (Sprint)	153	(2) TMA - Powerwave LGP17201 (Cingular)	95
ALU 800 RRU (Sprint)	153	DUO1417-8686 w/Mount Pipe (Cingular)	95
ALU 800 RRU (Sprint)	153	DUO1417-8686 w/Mount Pipe (Cingular)	95
ALU 800 Filter (Sprint)	153	DUO1417-8686 w/Mount Pipe (Cingular)	95
ALU 800 Filter (Sprint)	153	(2) Powerwave 7770 w/ Mount Pipe (Cingular)	95
ALU 800 Filter (Sprint)	153	(2) Powerwave 7770 w/ Mount Pipe (Cingular)	95
RFS ACU-A20-N RET (Sprint)	153	(2) Powerwave 7770 w/ Mount Pipe (Cingular)	95
(2) RFS ACU-A20-N RET (Sprint)	153	(2) TMA - Powerwave LGP17201 (Cingular)	95
RFS ACU-A20-N RET (Sprint)	153	RFS APXV18-206517S-C w/ Mount Pipe (Pocket)	85
(4) DB844H90E-XY w/Mount Pipe (Nextel)	143	RFS APXV18-206517S-C w/ Mount Pipe (Pocket)	85
(4) DB844H90E-XY w/Mount Pipe (Nextel)	143	RFS APXV18-206517S-C w/ Mount Pipe (Pocket)	85
(4) DB844H90E-XY w/Mount Pipe (Nextel)	143	GPS	70
(1) Low Profile Platform (Nextel)	143		
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	133		
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	133		
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	133		
(1) Low Profile Platform (T-Mobile)	133		
(2) Antel LPA-80063/6CF w/ Mount Pipe (Verizon)	123		
(2) Antel LPA-80063/6CF w/ Mount Pipe (Verizon)	123		
(2) Antel LPA-80063/6CF w/ Mount Pipe (Verizon)	123		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 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 60 mph wind.
5. TOWER RATING: 80.8%

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031
Tower Analysis

Job: Torrington CT01499-S			
Project: 12-04781E S1			
Client: SBA	Drawn by: Greg Clutter	App'd:	
Code: TIA/EIA-222-F	Date: 05/10/12	Scale: NTS	
Path: C:\Users\Greg Clutter\Desktop\Torrington, CT\S1- SA_SNV\Analysis\Torrington CT01499-S.eri		Dwg No. E-1	

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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

Sprint Existing Facility

Site ID: CT33XC112

Callicoon 3
1925 – 1931 East Main Street
Torrington, CT 06790

August 23, 2012

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

August 23, 2012

Sprint
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Re: Emissions Values for Site **CT33XC112 – Goshen**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 1925 – 1931 East Main Street, Torrington, CT, for the purpose of determining whether the emissions from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the PCS band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 1925 – 1931 East Main Street, Torrington, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all emissions were calculated using the following assumptions:

1) 4 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the RFS APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.

6) The antenna mounting height centerline of the proposed antennas is **150.4 feet** above ground level (AGL)
7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT33XC112 - Callicoon 3
Site Addresss	1925 - 1931 East Main Street, Torrington, CT 06790
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	150.4	144.4	1/2 "	0.5	0	2773.8948	47.82573	4.78257%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	150.4	144.4	1/2 "	0.5	0	389.96892	6.723596	1.18582%
															Sector total Power Density Value:		5.968%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	150.4	144.4	1/2 "	0.5	0	2773.8948	47.82573	4.78257%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	150.4	144.4	1/2 "	0.5	0	389.96892	6.723596	1.18582%
															Sector total Power Density Value:		5.968%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	150.4	144.4	1/2 "	0.5	0	2773.8948	47.82573	4.78257%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	150.4	144.4	1/2 "	0.5	0	389.96892	6.723596	1.18582%
															Sector total Power Density Value:		5.968%

Site Composite MPE %	
Carrier	MPE %
Sprint	17.905%
Nextel	2.790%
T-Mobile	2.390%
Verizon Wireless	18.600%
Pocket	9.420%
Town	5.000%
AT&T	14.840%
Total Site MPE %	**70.945%**

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the Sprint facility are **17.905% (5.968% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **70.945%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government

Scott Heffernan
RF Engineering Director

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