



HPC Wireless Services  
46 Mill Plain Rd.  
Floor 2  
Danbury, CT, 06811  
P.: 203.797.1112

November 4, 2014

VIA EMAIL AND OVERNIGHT DELIVERY

Ms. Melanie A. Bachman  
Acting Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

RE: Sprint Spectrum, L.P. – Notice of Exempt Modification  
21 West Peak Drive, Meriden, CT

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Sprint Spectrum, L.P. (“Sprint”). Sprint is undertaking modifications to certain existing sites in its Connecticut network in order to implement updated technology. In order to do so, Sprint 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 Mayor of the City of Meriden.

Sprint plans to modify the existing facility at 21 West Peak Drive, owned by Thomas Brothers LLC (coordinates 41°33’42.98”N, -72°50’39.05”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 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. Sprint proposes to add three (3) antennas and three (3) remote radio heads, all at a centerline height of approximately 70’ above the tower base. Additionally, Sprint will install one (1) new hybrid cable along the existing ice bridge to the tower.

Boston

Albany

Buffalo

Danbury

Philadelphia

Raleigh

Atlanta

2. The proposed changes will not extend the site boundaries. Sprint will install additional batteries and new rectifiers in existing cabinets. Thus, there will be no effect on the site compound or Sprint's leased area.

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, Sprint's operations at the site will result in a power density of 15.56%; the combined site operations will result in a total power density of 15.56%.

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

Respectfully submitted,

By:   
Eric Dahl, Consultant  
[edahl@comcast.net](mailto:edahl@comcast.net)  
860-227-1975

#### Attachments

cc: Honorable Manuel A. Santos, Mayor, City of Meriden  
Thomas Brothers LLC, Property Owner

NO.	DATE	DESCRIPTION	BY
01	04/24/14	INITIAL BIDDING	DLA
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			



6580 SPRINT PARKWAY  
OVERLAND PARK, MISSOURI 66281  
(817) 438-7488



A SANON DESIGN GROUP  
34 WYOMING ROAD, SUITE 200  
TOWSON, MD 21286

ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

SIGNATURE:

PROFESSIONAL ENGINEER  
CONNECTICUT LICENSE NO. 29403

PROJECT NO. ASDGSP41

CLIENT ID NO. CT58XC962

SITE INFORMATION  
2.5 GHz

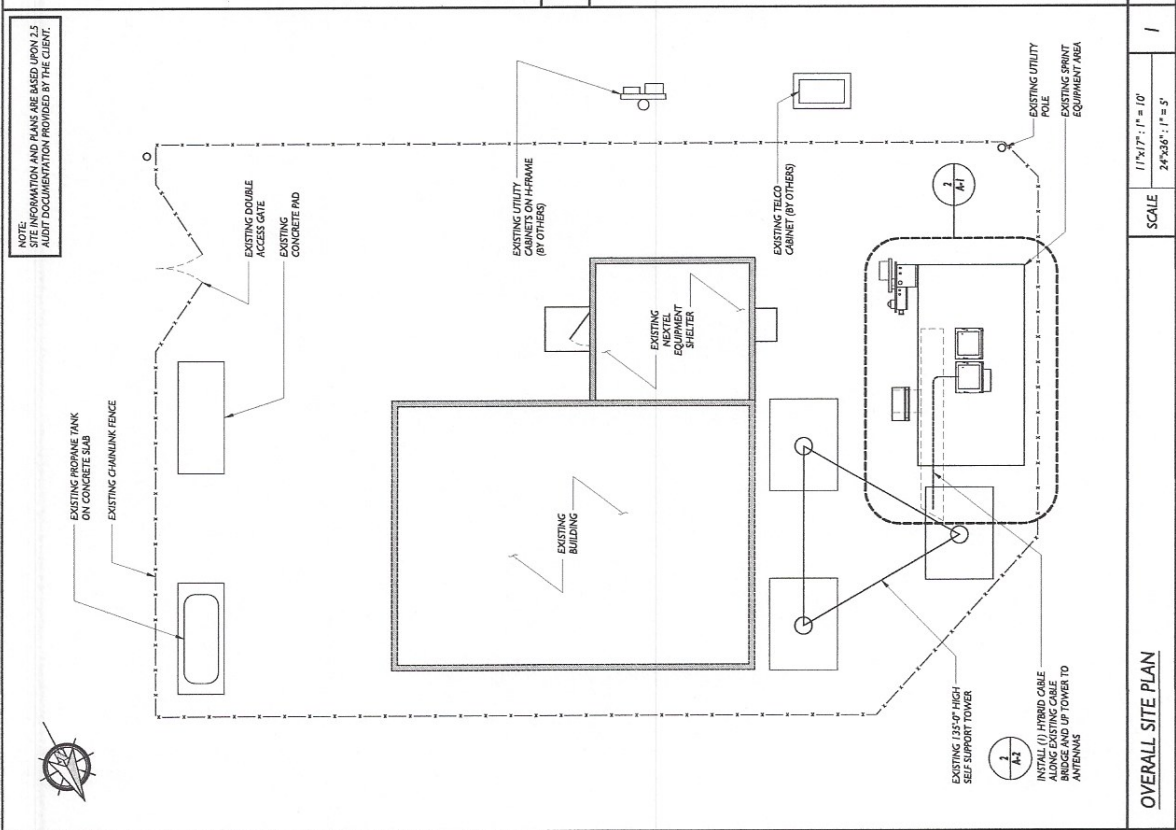
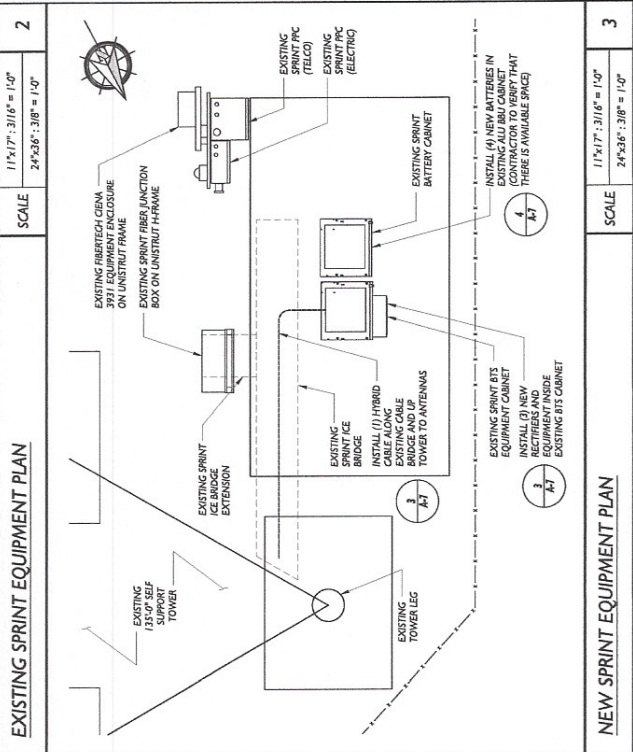
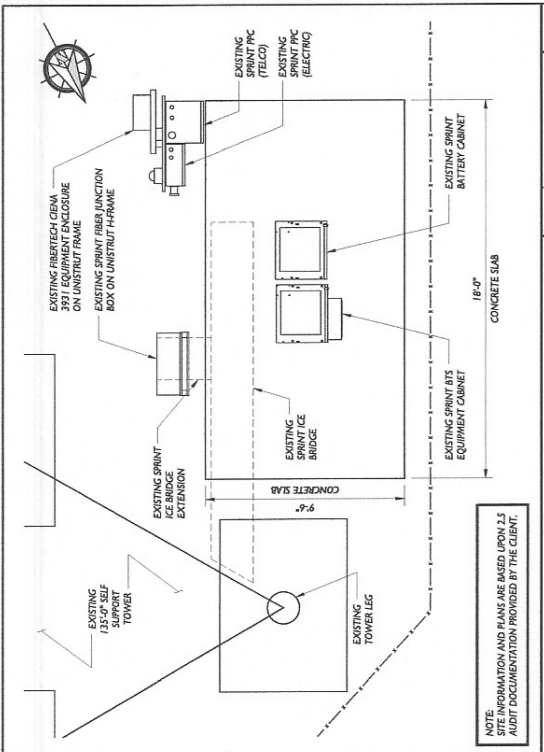
HAMDEN COMMUNICATION TOWER  
21 WEST PEAK DRIVE  
MERIDEN, CT 06037

DRAWING TITLE

SITE PLAN

DATE:	04/24/14
DRAWN BY:	DLA
CHECKED BY:	
SCALE:	A-1

POINT SHEET: 0004.DWG



REV	DATE	DESCRIPTION	BY	CHKD.
01	04/21/14	REVISED PER COMMENTS	MS	MS
02				
03				
04				
05				
06				
07				
08				
09				
10				

**Sprint**  
 6500 SPRINT PARKWAY  
 OVERLAND PARK, KS 66207  
 (817) 438-7488

**A SAXON DESIGN GROUP**  
 34 WINDYBROOK LANE  
 TOWN OF FARMINGTON  
 CT 06031

ENGINEER'S LICENSE  
**MICHAEL L BOHLINGER**

SIGNATURE: \_\_\_\_\_  
 PROFESSIONAL ENGINEER  
 CONNECTICUT LICENSE NO. 36485

PROJECT No: ASDGSP41  
 CLIENT ID No: CT58XC962  
 TOWER TYPE: 2.5 GHz

TOWER INFORMATION  
**HAMDEN COMMUNICATION TOWER**  
 21 WEST PEAK DRIVE  
 MERIDEN, CT 06037

DRAWING TITLE  
**SITE ELEVATION  
 AND CABLE PLAN**

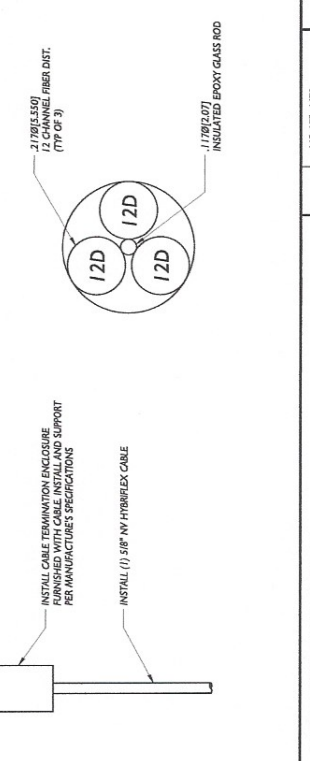
MICHAEL L BOHLINGER  
 CT LICENSE NO. 36485

DATE: 04/21/14  
 PROJECT No: ASDGSP41  
 DRAWING No: 01  
 SHEET No: 01  
 DWG No: A-2

POST STREET 3011 BURLINGAME

**HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE**

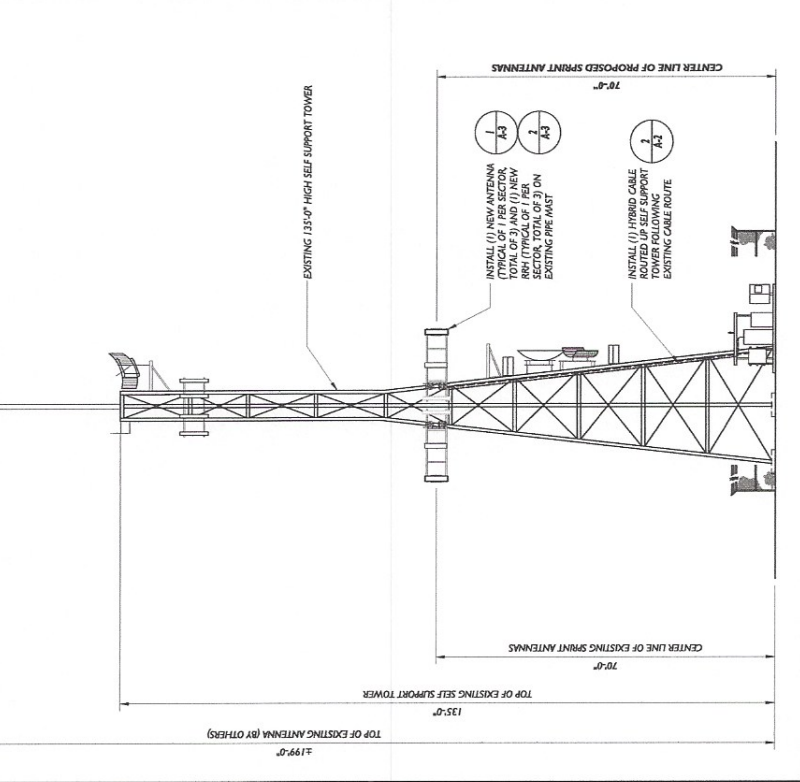
CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY		USE NY HYBRIFLEX	5/8"
HYBRIFLEX	OVER 300'	8 AWG	1 1/4"
HYBRIFLEX	225'-300'	6 AWG	1 1/4"
HYBRIFLEX	325'-375'	4 AWG	1 1/4"



**HYBRID BREAK OUT DETAIL**

SCALE: 1/1" = 17'-0" NTS  
 2/4" = 36'-0" NTS

**NOTE:**  
 SITE INFORMATION AND PLANS ARE BASED UPON 2.5  
 AUDIT DOCUMENTATION PROVIDED BY THE CLIENT.



**NOTE:**  
 STRUCTURAL ANALYSIS FOR PROPOSED  
 INSTALLATION TO BE PROVIDED BY OTHERS

**SITE ELEVATION**

SCALE: 1/1" = 17'-0" NTS  
 2/4" = 36'-0" NTS



## REPORT 348705

DATE: 10/16/2014

STRUCTURAL ANALYSIS  
FOR A 135' SELF-SUPPORTING TOWER  
WATERBURY, CT

PREPARED BY: PCC  
CHECKED BY: AP

APPROVED: AP 10/20/14

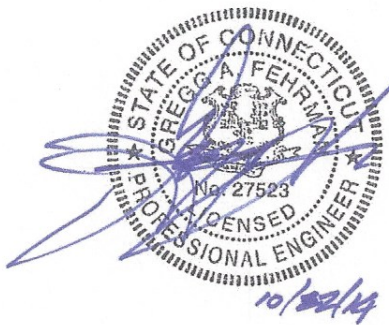


**PROFESSIONAL ENGINEER**  
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of CONNECTICUT  
Print Name: Gregg A. Fehrman  
Signature: [Handwritten Signature]  
Date 10/20/14 license # 27523

Date	Pages	Remarks

Rev.	Date	Description
------	------	-------------

<u>SECTION</u>	<u>PAGE</u>
A. AUTHORIZATION/PURPOSE .....	1
B. TOWER HISTORY .....	1
C. CONDITIONS INVESTIGATED .....	1
D. LOADS AND STRESSES .....	2
E. METHOD OF ANALYSIS .....	3
F. RESULTS .....	3
G. CONCLUSIONS AND RECOMMENDATIONS .....	4
H. PROVISIONS OF ANALYSIS.....	4
 <u>APPENDIX</u>	
GENERAL ARRANGEMENT .....	A-1
LINEAR APPURTENANCES .....	A-2



<b>PROFESSIONAL ENGINEER</b>	
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of <u>CONNECTICUT</u>	
Print Name:	<u>Gregg A. Fehrman</u>
Signature:	<u>[Signature]</u>
Date <u>10/22/14</u>	License # <u>27523</u>

Rev.	Date	Description
------	------	-------------

A. AUTHORIZATION/PURPOSE

As authorized by Mark Gilmore of Thomas Brothers Company LLC, a structural analysis was performed to investigate the adequacy of a 135' self-supporting tower in Waterbury, CT to support specified equipment.

B. TOWER HISTORY

The tower was originally designed and furnished in 1990 by Stainless, Inc. It was designed in accordance with EIA Standard RS-222-D for a basic wind speed of 95 mph with no ice and 82 mph with 1/2" radial ice to support the following equipment:

1. One (1) 3-bay FM antenna on mounting pole, fed with one (1) 3" line.
2. One (1) 2-bay FM antenna on mounting pole, fed with one (1) 3" line.
3. One (1) 60 ft support pole mounted on top of the tower to support items 1 & 2.
4. Two (2) 8 ft parabolic antennas at the 100' level, fed with one (1) 1-5/8" line to each.
5. One (1) ice shield at the 100' level'.
6. Two (2) Scala PR-450 antennas at the 50' level, fed with one (1) 7/8" line to each.
7. One (1) ice shield at the 50' level.
8. One (1) 1" support conduit for the full height of the tower.
9. One (1) 1-1/4" support conduit to the 100' level.
10. One (1) ladder with cable safety device for the full height of the tower.

C. CONDITIONS INVESTIGATED

The analysis was performed for the tower supporting specified equipment based upon the following sources:

- Stainless LLC Contract Proposal P14\_3487\_001 dated 08/13/2014.
  - Stainless LLC Analysis Report 348704, dated 09/25/14.
  - Construction Drawings for Site Name: Hamden Communication Tower, Site Number: CT58XC962, dated 04/08/2014, prepared by A Saxon Design Group.
  - Email from Mark Gilmore of Thomas Brothers, dated 10/10/2014, to Alan Pang of Stainless LLC for removing all equipment and mounts at the 110' level and related feeding lines.
1. One (1) 3-bay ERI FM antenna at the 185' level, fed with one (1) 3" line.
  2. One (1) 1-bay ERI FM antenna at the 162' level, fed with one (1) 1-5/8" line.
  3. One (1) 60 ft support pole mounted on top of the tower to support item 1 and item 2.

Rev.	Date	Description
------	------	-------------

4. One (1) whip antenna on standoff mount at the 135' level, fed with one (1) 1/2" line.
5. One (1) 4' Scala Paraflector antenna at the 132' level, fed with one (1) 7/8" line and one (1) 3/8" cable.
6. One (1) platform at the 125' level.
7. Three (3) Powerwave P40-16XLPP-RR-A panel antennas, three (3) **proposed** RFS APXVTM14-C-120 , three (3) ALU RRH 1900 and three (3) ALU RRH800 and three (3) **proposed** TD-RRH8x20-25 units on three (3) sector mounts at the 70' level, fed with three (3) 1-1/4" hybriflex cables and one (1) **proposed** 5/8" hybriflex cable.
8. One (1) ice shield at the 60' level.
9. One (1) Scala Yagi antenna with radome at the 53.5' level, fed with one (1) 1/2" line.
10. One (1) 6' grid dish at the 48' level, fed with one (1) 7/8" line.
11. One (1) 4' Scala Paraflector antenna at the 43' level, fed with one (1) 7/8" line.
12. One (1) Scala Yagi antenna with radome at the 40' level, fed with one (1) 1/2" line.
13. One (1) 1" support conduit to top of the tower.
14. One (1) 1-1/4" support conduit to the 100' level.
15. One (1) waveguide rack to the 110' level.
16. One (1) waveguide rack to the 70' level.
17. One (1) unused 7/8" line to the 48' level.
18. One (1) ladder with cable safety device to top of the tower.

The locations of the existing transmission lines are based on Stainless LLC Analysis Report 348704, dated 09/25/2014. The locations of all transmission lines are shown on page A-2 of this Report. Deviating from this transmission line arrangement will affect the accuracy of the results presented in this Report.

#### D. LOADS AND STRESSES

The analysis was performed using a basic wind speed of 95 mph no ice and 39 mph with 1" radial ice thickness. This load was calculated and applied in accordance with the provisions of ANSI/TIA/EIA Standard 222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, effective March 29, 1996.

Allowable unit stresses and minimum safety factors used to evaluate the adequacy of the structure were also in accordance with this TIA/EIA Standard.



Rev.	Date	Description
------	------	-------------

E. METHOD OF ANALYSIS

The analysis was performed using TNXTower, a computer software program which idealizes the tower as a finite element model subject to simultaneous transverse (wind) and axial (dead plus ice) loads.

F. RESULTS

The results of the analysis show no overstresses in any tower member or foundations. The tables below show the maximum ratings of the tower and foundations:

LOCATION	TOWER COMPONENT	% MAXIMUM CAPACITY
130' to 135' (top)	Top plate	100
	Vertical members, compression	39
	Vertical members, tension	39
	Diagonal members	100
	Horizontal members	71
110' to 130'	Vertical members, compression	86
	Vertical members, tension	71
	Diagonal members	83
	Horizontal members	16
90' to 110'	Vertical members, compression	76
	Vertical members, tension	63
	Diagonal members	52
	Horizontal members	26
67.5' to 90'	Vertical members, compression	75
	Vertical members, tension	65
	Diagonal members	10
	Horizontal members	7
47.5' to 67.5'	Vertical members, compression	85
	Vertical members, tension	71
	Diagonal members	18
	Horizontal members	8
27.5' to 47.5'	Vertical members, compression	77
	Vertical members, tension	53
	Diagonal members	39
	Horizontal members	12
0' to 27.5'	Vertical members, compression	83
	Vertical members, tension	57
	Diagonal members	41
	Horizontal members	61

Rev.	Date	Description
------	------	-------------

LOCATION	TOWER COMPONENT	% MAXIMUM CAPACITY
Tower Base	Foundations	84

G. CONCLUSIONS AND RECOMMENDATIONS

Based on the preceding results, the following conclusion may be drawn:

1. The tower supporting equipment as specified in Section C above is adequate to achieve a basic wind speed 95 mph no ice and 39 mph with 1" radial ice in accordance with ANSI/TIA/EIA Standard 222-F.

H. PROVISIONS OF ANALYSIS

The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

1. Proper alignment and plumbness.
2. Correct bolt tightness.
3. No significant deterioration or damage to any component.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-arts" engineering and analysis procedures and formulae, and Stainless LLC assumes no obligations to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will Stainless LLC have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the Report, and the maximum liability of Stainless LLC, if any, pursuant to this Report shall be limited to the total funds actually received by Stainless LLC for preparation of this Report.

Customer has requested Stainless LLC to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested Stainless LLC to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of Stainless LLC, Customer has informed Stainless LLC that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by Stainless LLC and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice.

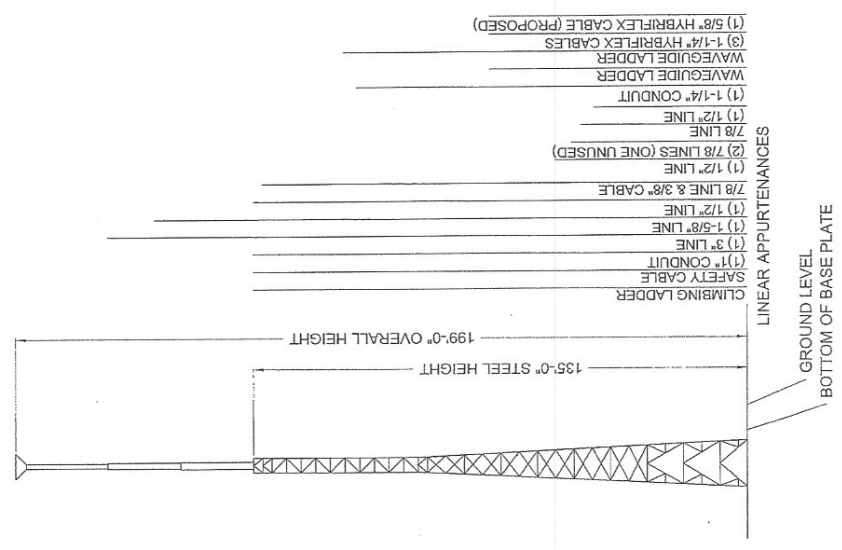
---

Rev.	Date	Description
------	------	-------------

Customer hereby agrees and acknowledges that Stainless LLC shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than Stainless LLC in connection with the implementation of any structural changes or modifications recommended by Stainless LLC including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that Stainless LLC shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor.

- DISCRETE APPURTENANCES
- |     |   |                                   |       |
|-----|---|-----------------------------------|-------|
| 1.  | 1 | ERI 3-BAY FM ANTENNA ON POLE      | 180'  |
| 2.  | 1 | ERI 1-BAY FM ANTENNA ON POLE      | 162'  |
| 3.  | 1 | WHIP ANTENNA                      | 135'  |
| 4.  | 1 | SCALA PARAREFLECTOR ANTENNA       | 132'  |
| 5.  | 1 | PLATFORM                          | 125'  |
| 6.  | 1 | (3) EXIST. (3) PROPOSED ANTS, ETC | 70'   |
| 7.  | 1 | ICE SHIELD                        | 60'   |
| 8.  | 1 | SCALA YAGI WIRADOME               | 53.5' |
| 9.  | 1 | 6' GRID DISH                      | 48'   |
| 10. | 1 | SCALA PARAREFLECTOR ANTENNA       | 43'   |
| 11. | 1 | SCALA YAGI WIRADOME               | 40'   |

- ELEV.
- |       |
|-------|
| 180'  |
| 162'  |
| 135'  |
| 132'  |
| 125'  |
| 70'   |
| 60'   |
| 53.5' |
| 48'   |
| 43'   |
| 40'   |



TOWER TYPE: SELF-SUPPORTING TOWER  
STD.: ANSI/TIA/EIA-222-F  
LOAD CASE(S)  
95 MPH NO ICE  
39 MPH BASIC WIND SPEED WITH 1" RADIAL ICE

 100 West Main Street, Suite 400 Lansdale, PA 19448 <b>Stainless LLC</b>		<b>GENERAL ARRANGEMENT</b> WATERBURY, CT		THIS DRAWING IS THE PROPERTY OF STAINLESS LLC AND TRANSMITTED IN PART OF THE DESIGN AND SHALL CONTAINED HEREIN IS FOR THE USE OF STAINLESS LLC AND THE REPRODUCTION OR TRANSMISSION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF STAINLESS LLC	
REV	BY	DATE	REVISION DESCRIPTION	D/C	DATE
*	*	*			
DRAWING NUMBER <b>348705</b>			PROJECT NUMBER <b>A-1</b>		
PREPARED BY	CHECKED BY	ENGINEER	REVIEW	DATE	E/C
PCC					
10/15/2014					

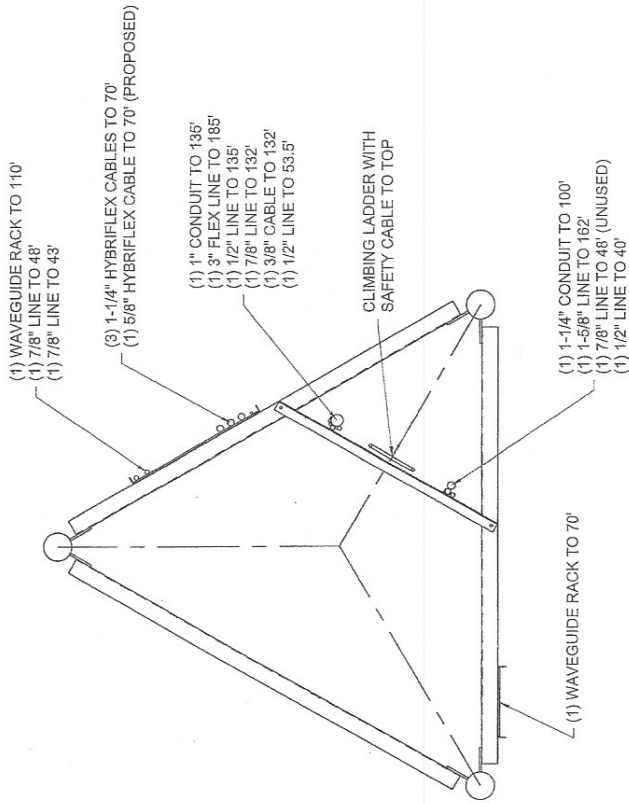
THIS DRAWING IS THE PROPERTY OF STAINLESS LLC AND TRANSMITTED IN CONFIDENCE AND THE PROPRIETARY USE OR REPRODUCTION IN WHOLE OR IN PART OF THE DESIGN AND DETAILS CONTAINED HEREIN IS PROHIBITED WITHOUT THE PRIOR WRITTEN PERMISSION OF STAINLESS LLC.

**Stainless LLC**  
 100 West Main Street, Suite 400  
 Lancaster, PA 17602

**LINEAR APURTENANCES**  
 WATERBURY, CT

REV	BY	DATE	REVISION DESCRIPTION
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*

DRAWING NUMBER	PROJECT NUMBER	ENGINEER	CHECKED BY	PREPARED BY	PCC	DATE
A-2	348705					10/16/2014



RADIO FREQUENCY FCC REGULATORY COMPLIANCE  
MAXIMUM PERMISSIBLE EXPOSURE (MPE) ASSESSMENT

Sprint Existing Facility

Site ID: CT58XC962

Hamden Communications Tower

21 West Peak Drive  
Meriden, CT 06037

**November 3, 2014**

**EBI Project Number: 62145908**

November 3, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:  
**CT58XC962 - Hamden Communications Tower**

**Site Total: 15.56% - MPE% in full compliance**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at **21 West Peak Drive, Meriden, CT**, for the purpose of determining whether the radio frequency (RF) exposure levels 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limit for the cellular band (850 MHz Band) is approximately  $567 \mu\text{W}/\text{cm}^2$ , and the general population exposure limit for the 1900 MHz and 2500 MHz bands is  $1000 \mu\text{W}/\text{cm}^2$ . 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 **21 West Peak Drive, Meriden, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. 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 channels in the 1900 MHz Band were considered for each sector of the proposed installation.
- 2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation.
- 3) 2 channels in the 2500 MHz Band were considered for each sector of the proposed installation.
- 4) 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.



- 5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 6) The antennas used in this modeling are the POWERWAVE P40-16-XLPP-RR-A and the RFS APXVTM14-C-I20. This is based on feedback from the carrier with regards to anticipated antenna selection. The POWERWAVE P40-16-XLPP-RR-A 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. The RFS APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline for the proposed antennas is **70 feet** above ground level (AGL).
- 8) 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	CT58XC962 - Hamden Communications Tower
Site Address	21 West Peak Drive, Meriden, CT, 06037
Site Type	Self Support Tower

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 (10 db reduction)	Antenna Height (ft)	Antenna analysis height	Power Density Percentage
1a	Powerwave	P40-16-XLPP-RR-A	RRH	1900 MHz	CDMA / LTE	20	4	80	5.9	70	64	2.43%
1a	Powerwave	P40-16-XLPP-RR-A	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	70	64	0.60%
1b	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	70	64	2.15%
											Sector total Power Density Value:	5.19%

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 (10 db reduction)	Antenna Height (ft)	Antenna analysis height	Power Density Percentage
2a	Powerwave	P40-16-XLPP-RR-A	RRH	1900 MHz	CDMA / LTE	20	4	80	5.9	70	64	2.43%
2a	Powerwave	P40-16-XLPP-RR-A	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	70	64	0.60%
2b	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	70	64	2.15%
											Sector total Power Density Value:	5.19%

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 (10 db reduction)	Antenna Height (ft)	Antenna analysis height	Power Density Percentage
3a	Powerwave	P40-16-XLPP-RR-A	RRH	1900 MHz	CDMA / LTE	20	4	80	5.9	70	64	2.43%
3a	Powerwave	P40-16-XLPP-RR-A	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	70	64	0.60%
3b	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	70	64	2.15%
											Sector total Power Density Value:	5.19%

Site Composite MPE %	
Carrier	MPE %
Sprint	15.56%
<b>Total Site MPE %</b>	<b>15.56%</b>



# EBI Consulting

environmental | engineering | due diligence

---

## Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public Maximum Permissible Exposure (MPE) to radio frequency energy.

The anticipated Maximum Composite contributions from the Sprint facility are **15.56%** (**5.19% from sector 1, 5.19% from sector 2 and 5.19% from sector 3**) 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 **15.56%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE 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

**EBI Consulting**  
21 B Street  
Burlington, MA 01803