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

HPC
WIRELESS SERVICES

July 25, 2014

VIA OVERNIGHT COURIER

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

Re: Sprint Spectrum, L.P. – Exempt Modification
232 South Main Street (aka 236 South Main Street), East Windsor, Connecticut

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 system in order to implement updated technology. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction that 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 East Windsor.

Sprint plans to modify the existing wireless communications facility owned by the Balch Bridge Street Corporation and located at 232 South Main Street (aka 236 South Main Street), East Windsor, (coordinates 41°-52'-37.8" N, 72°-36'-38.8" W). Attached are plan and elevation drawings depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration, subject to modifications detailed in the attached structural documentation. Also included is a power density report 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. Previously, Sprint's plans to remove the existing six (6) CMDA antennas and add three (3) dual-band panel LTE antennas on new pipe masts, on the existing T-frames at a centerline height of approximately 123', were submitted to your Agency and approved. Sprint's plans to install six (6) RRHs (remote radio heads) on new RRH pipes next to the antennas, also at a centerline height of approximately 123', were also approved. That

work has been completed except that only three (3) RRHs were installed. In this application, Sprint plans to add an additional three (3) dual band panel LTE antennas for a total of six (6) dual band panel antennas, and will also add three (3) 2.5 RRHs (remote radio heads), on existing pipe masts, all at a centerline height of approximately 123'. Sprint's approved plans to install three (3) hybrifex cables will now be increased to also include the installation of one (1) hybrid fiber cable, all along the existing coaxial cable run. The preexisting six (6) CMDA antennas, and all preexisting coaxial cables, will be removed at the end of an interim period which shall not exceed one (1) year. The proposed modifications will not extend the height of the approximately 188' structure.

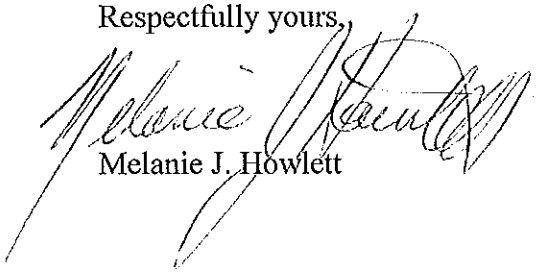
2. Sprint's plans to replace the two (2) existing cabinets with three (3) similar cabinets, all on the existing Concrete Pad; add a new surge suppressor, and place a new fiber/power junction box on new posts on a proposed H-frame on the existing platform, all also on the existing Concrete Pad, were submitted and approved by your Agency. Sprint's plans to remove the existing GPS antenna, on the existing Ice Bridge, and replace it with another GPS antenna were also approved. In this application, Sprint also plans to replace batteries and rectifiers in two (2) of the cabinets. These changes will have no effect on the site boundaries and the leased space of 8' X 11' shall not be increased.

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 report prepared by EBI Consulting, Sprint's operations at the site will result in a power density of approximately 1.89%; the combined site operations will result in a total power density of approximately 45.01%.

Please contact me by phone at (203) 610-1071 or by e-mail at mjhowlett@optonline.netwith questions concerning this matter. Thank you for your consideration.

Respectfully yours,

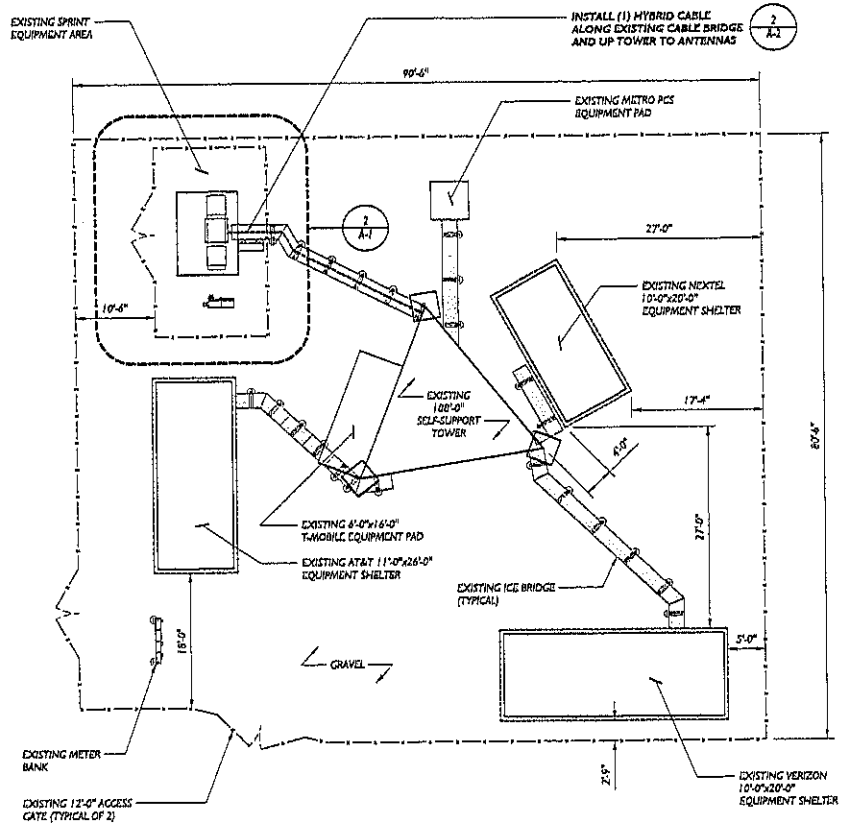


Melanie J. Howlett

Attachments

cc: Honorable Denise Menard, First Selectman, Town of East Windsor
Balch Bridge Street Corporation (underlying property owner)

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

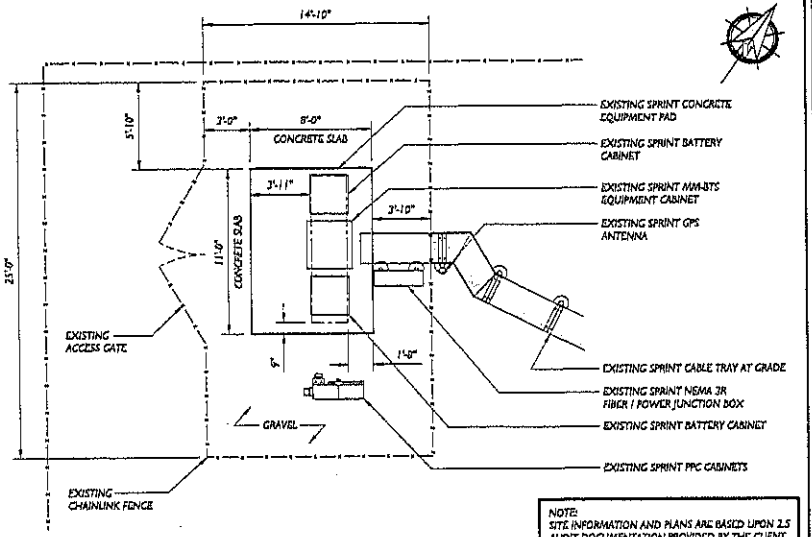


NOTE:
TOWER STRUCTURAL ANALYSIS TO BE PROVIDED BY OTHERS

OVERALL SITE PLAN

SCALE	11"x17" : 1/16" = 1'-0"
	24"x36" : 1/8" = 1'-0"

1

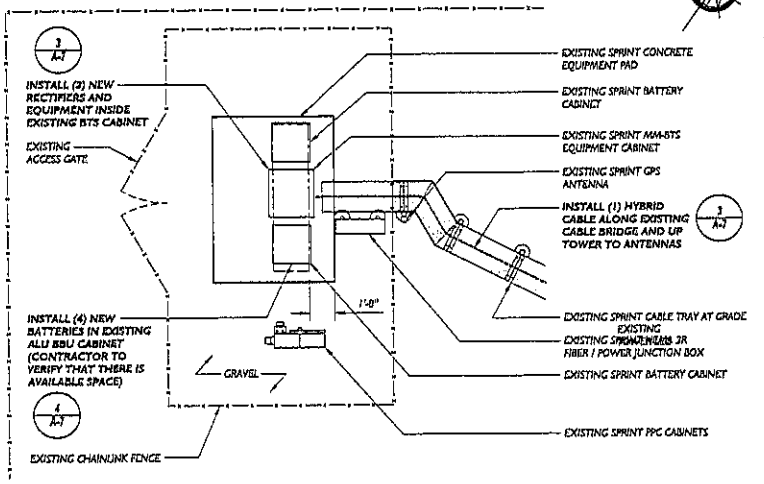


NOTE:
SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE CLIENT.

EXISTING SPRINT EQUIPMENT PLAN

SCALE	11"x17" : 1/8" = 1'-0"
	24"x36" : 1/4" = 1'-0"

2



FINAL SPRINT EQUIPMENT PLAN

SCALE	11"x17" : 1/8" = 1'-0"
	24"x36" : 1/4" = 1'-0"

3

NO.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
00	07-31-14	FINAL SUBMISSION	CD	RJH

Sprint
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251
(517) 436-7486

A SAXON DESIGN GROUP
244 RIVERS EDGE LANE
TOMS RIVER, NJ 08755
(732) 678-0100

ENGINEER'S LICENSE

MICHAEL L BOHLINGER

SIGNATURE

PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 20405

ASDG PROJECT No:	ASDGSP50
CLIENT ID No:	CT03XC090
DESIGN TYPE:	2.5 GHz

SITE INFORMATION:
BALCH TOWER
236 SOUTH MAIN STREET
EAST WINDSOR, CT 06088
HARTFORD COUNTY

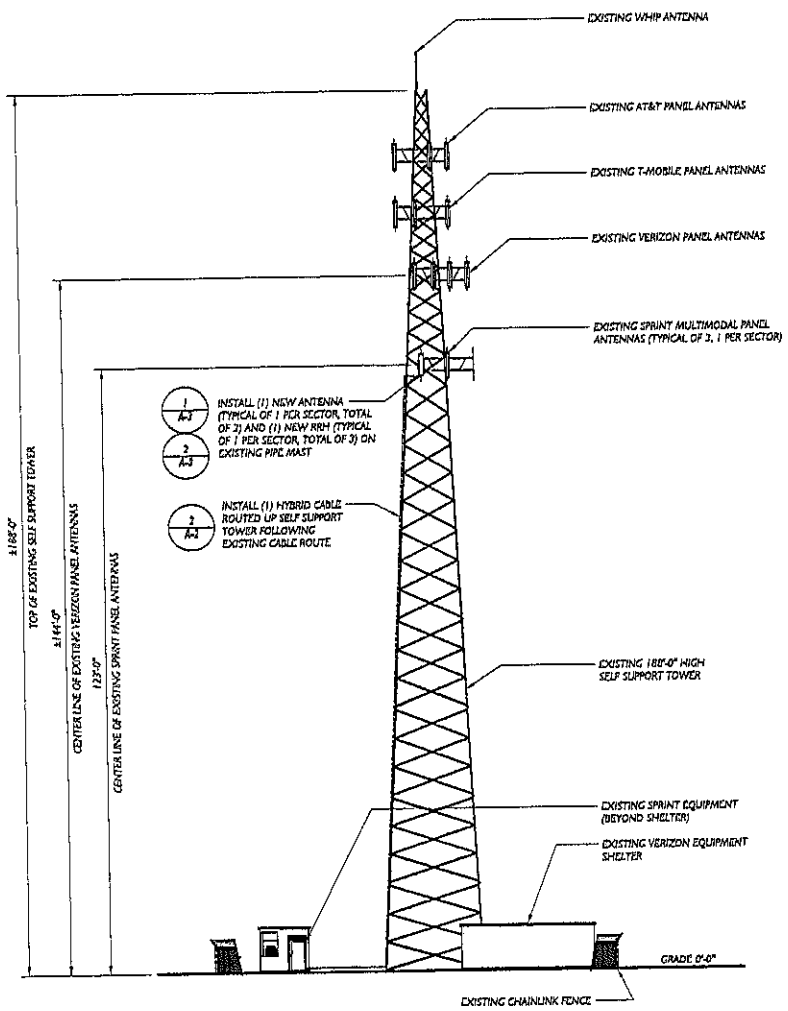
DRAWING TITLE:
SITE PLAN

MICHAEL L. BOHLINGER
CT LICENSE No. 20405

DATE:	07-31-14
PROJECT No:	ASDGSP50
DRAWING BY:	CD
CHK'D BY:	
DWG No:	A-1

24"x36" SHEET - ISO A SERIES

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

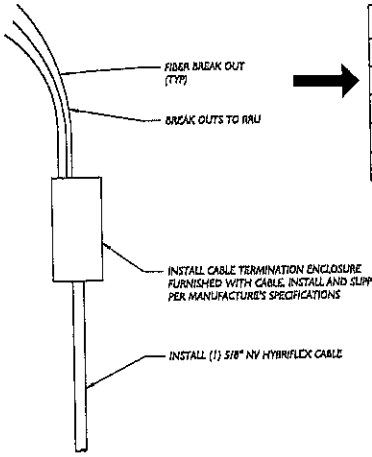


NOTE:
STRUCTURAL ANALYSIS FOR PROPOSED INSTALLATION TO BE PROVIDED BY OTHERS

SITE ELEVATION

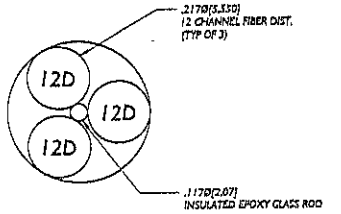
SCALE: 11"x17" : NTS; 24"x36" : NTS

1



HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE

CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	5/8"
HYBRIFLEX	OVER 200'	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: 11"x17" : NTS; 24"x36" : NTS

2

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
00	07-31-14	INITIAL SUBMISSION	CD	KM

Sprint

6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251
(517) 436-7466

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244 RIVERS EDGE LANE
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(732) 674-0155

ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

SIGNATURE:

PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 29405

ASDG PROJECT No: ASDGSP50

CLIENT ID No: CT03XC090

DESIGN TYPE: 2.5 GHz

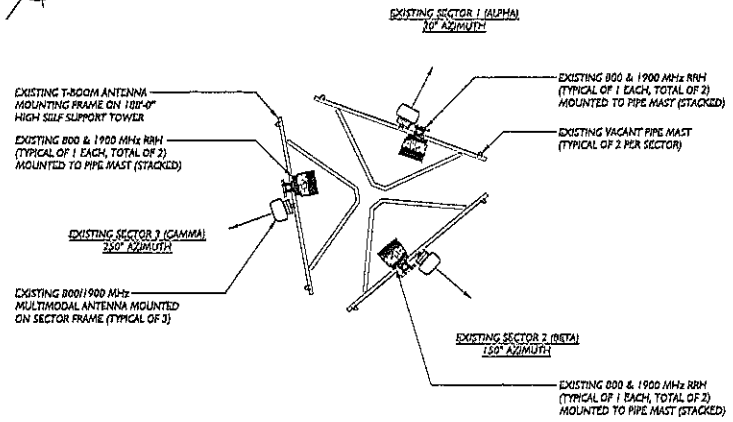
SITE INFORMATION:
BALCH TOWER
236 SOUTH MAIN STREET
EAST WINDSOR, CT 06088
HARTFORD COUNTY

DRAWING TITLE:
SITE ELEVATION
AND CABLE PLAN

MICHAEL L. BOHLINGER
CT LICENSE No. 29405

DATE: 07-31-14
PROJECT No: ASDGSP50
DRAWING BY: CD
CHK BY:
DWG No: A-2

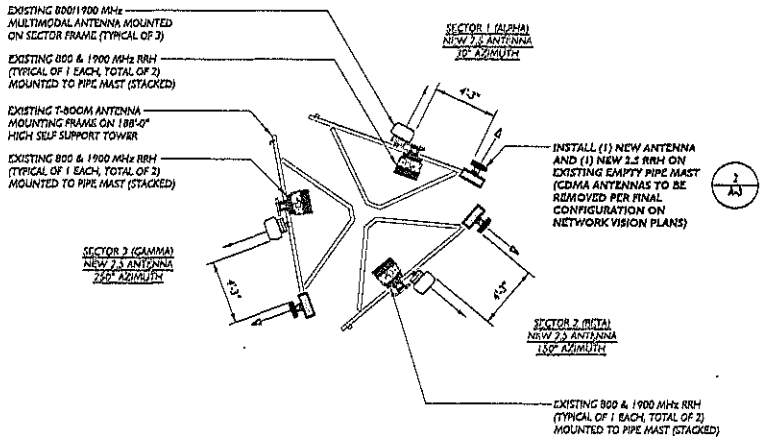
24"x36" SHEETS - GEN & SPEC APPL



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

EXISTING

NOTE:
STRUCTURAL ANALYSIS FOR MOUNTING PROPOSED 2.5 ANTENNA AND RRH IS TO BE COMPLETED BY OTHERS



FINAL

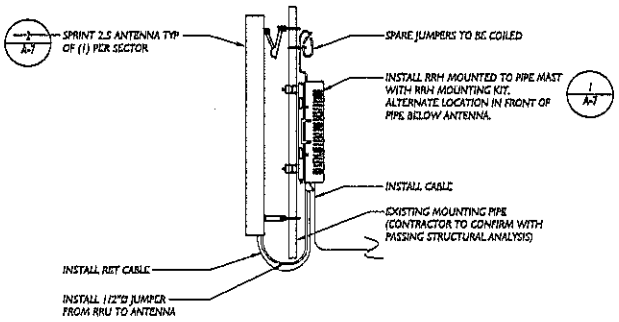
EXISTING AND PROPOSED ANTENNA PLAN @ ±123'-0"

SCALE	11"x17" : 1/8" = 1'-0"
	24"x36" : 1/4" = 1'-0"

1

NOTE:
1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE TO SIDE OF RRU.
3. DO NOT EXCEED BEND RADIUS.
4. JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA CAN NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.

NOTE:
STRUCTURAL ANALYSIS FOR MOUNTING PROPOSED 2.5 ANTENNA AND RRH IS TO BE COMPLETED BY OTHERS



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

ANTENNA AND RRU MOUNTING DETAIL

SCALE	11"x17" : NTS
	24"x36" : NTS

2

NO.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
00	07-21-14	INITIAL SUBMISSION	CD	JLH

Sprint

8580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251
(517) 436-7468

A SAXON DESIGN GROUP
244 RIVERS EDGE LANE
TOMS RIVER, NJ 08755
(732) 875-0100

ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

SIGNATURE:

PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 20405

ASDG PROJECT No:
ASDGSP50

CLIENT ID No:
CT03XC090

DESIGN TYPE:
2.5 GHz

SITE INFORMATION:
BALCH TOWER
236 SOUTH MAIN STREET
EAST WINDSOR, CT 06088
HARTFORD COUNTY

DRAWING TITLE:
ANTENNA PLAN
AND MOUNTING DETAILS

MICHAEL L. BOHLINGER
CT LICENSE No. 20405

DATE:	07-21-14
PROJECT No:	ASDGSP50
DRAWING BY:	CD
CHK'D BY:	
DWG No:	A-3

24"x36" SHEETS - SCALE AS SHOWN

ALL-POINTS TECHNOLOGY CORPORATION, P.C.

June 13, 2014

HPC Wireless Services
22 Shelter Rock Lane, Building C
Danbury, CT 06810

Attn: Debra Overbey
Re: 188' Self-Supporting Tower
Balch East Windsor, Connecticut
Sprint Site #CT03XC090

Dear Debra,

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of the 188' self-supporting tower located at 236 South Main Street in East Windsor, Connecticut for equipment changes proposed by Sprint. Our analysis indicated reinforcement was required for the tower to meet the current structural code. Results of our analysis were presented in a report dated June 6, 2014.

Reinforcement design was conducted in accordance with the Massachusetts State Building Code and TIA-222, revision G, *Structural Standard for Antenna Supporting Structures and Antennas* using a 3-second gust wind speed of 105-mph with no ice and 40-mph with ¾" radial ice for the following loading (proposed equipment shown in **bold** text):

Antenna	Elev.	Mount	Coax.
Antel BCD-87010N omni whip	195'	Rotatable Platform	(1) 1/4"
Diamond X-50NA omni whip	195'	Rotatable Platform	(1) 1/2"
(3) APXV18-206517 panel antennas	176'	Leg	(6) 1-5/8"
(6) SBNH-1D6565C, (3) 800-10121, (3) RRHs, (6) TMAs	168'	(3) 15' sector mounts	(12) 1-1/4", (2) #8 AWG (1) RG6 fiber
(6) RR90-17-02DP, (6) APX16DWV-DWVS panel antennas, (6) TMAs	155'	(3) 12' sector mounts	(18) 1-1/4"
(6) APL868013-42T0, (6) BXA-70063/6, (3) MGD3-800T0 panel antennas	141'	(3) 20' sector mounts	(15) 1-5/8"
(2) APXV9ERR18-C-A20, APXVSPP18-C-A20 panel antennas, (6) RRHs	123'	(3) 15' sector mounts	(3) RFS Hybriflex 1-1/4" cables
(6) APXVTM14-C-120 panel antennas, (3) RRHs	**123'**	Same as above	**(1) RFS HB114-1-08U4-MJ5 RRH hybrid cable, (3) Commscope ATCB-B01-006 AISG control cables, (27) jumpers**

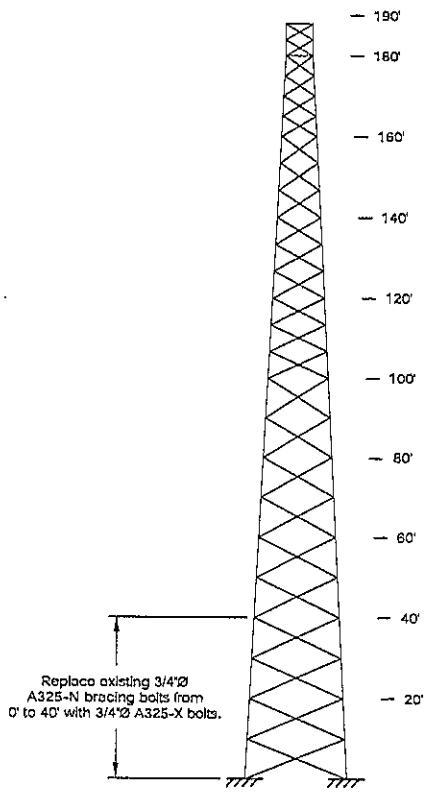
GENERAL NOTES:

1. Reinforcement based on structural analysis by All-Points Technology dated 6 June 2014, File No. CT255810.
2. Verify dimensions and existing conditions prior to fabrication. Bring discrepancies to the attention of the Engineer before proceeding with the affected portion of the work.
3. Work is to be accomplished on an existing in-service tower. Coordinate work to minimize disruption of existing facilities.
4. Design assumes experienced, competent and qualified personnel will be performing the work.
5. Work shown is typical for three tower faces and may require temporary relocation of utilities/hangers.
6. Work to be accomplished on one bracing bay at a time in light (<15 mph) wind conditions. Provide shoring or temporary bracing as required to complete the work.
7. Details shown are considered typical for all similar conditions unless otherwise noted.

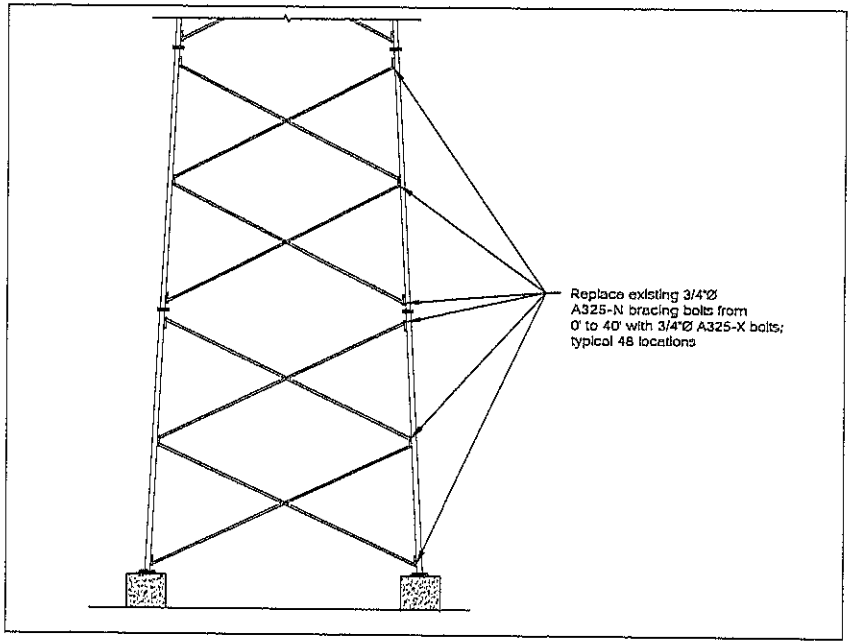
STRUCTURAL STEEL:

1. All structural steel work shall conform to the requirements of the American Institute of Steel Construction (AISC) and all applicable building codes.
2. Structural steel angles to be ASTM A36 steel.
3. All bolts shall be ASTM Grade A325-X, hot-dip galvanized per ASTM D153. Do not re-use existing bolts.
4. All bolts shall have galvanized lock washer or pal nut.
5. Bolts shall be tightened using the "turn of the nut" method as specified by AISC.
6. Apply a minimum of two coats of cold galvanizing to any field cut, welded, or drilled surfaces.

Antennas not shown for clarity



Tower Elevation
Scale: 1" = 30'



Brace Detail
No Scale

STATE OF CONNECTICUT ROBERT E. ADAM No. 20276 LICENSED PROFESSIONAL ENGINEER

All-Points Technology Corp., P.C. 110 GRANDVIEW ROAD CONWAY, NH 03818 PHONE: (603) 490-5838 FAX: (603) 447-2124 www.allpointstech.com	TOWER REINFORCEMENT SHEET: 1 OF 1		HPC WIRELESS SERVICES 22 SHELTER ROCK LANE BUILDING C DANBURY, CT 06810	SPRINT SITE #CT03XC090
	SCALE: AS NOTED	DRAWN BY: REA		188' SELF-SUPPORTING TOWER BALCH EAST WINDSOR, CONNECTICUT
	DATE: 13 JUN 14	APT JOB #CT255811		

The attached reinforcement drawing depicts required bolt replacements to support the proposed antenna changes. Completion of the attached modifications will result in a tower structure suitable for installation of Sprint's proposed changes.

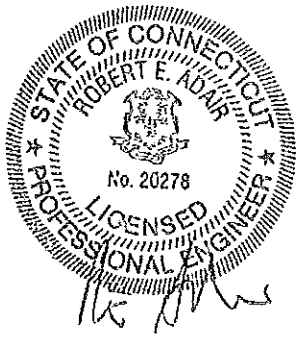
Evaluation of the base foundation was limited to a comparison of the reactions calculated under the proposed loads with design reactions indicated on the original ROHN assembly drawings referenced by Ramaker (ROHN project number SS-974, dated October 25,2000). Reactions imposed by the proposed additions are less than design reactions, indicating the foundation is adequately sized.

Please feel free to contact me if you have any questions.

Sincerely,
All-Points Technology Corporation, P.C.

Robert E. Adair, P.E.
Principal

CT255811 Balch East Windsor reinf ltr 6-13-14.doc



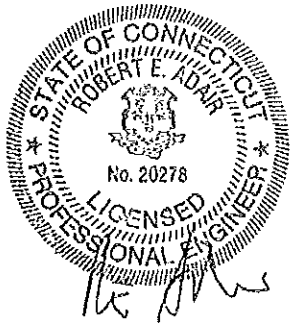
ALL-POINTS
TECHNOLOGY CORPORATION

STRUCTURAL ANALYSIS REPORT
188' SELF-SUPPORTING TOWER
EAST WINDSOR, CONNECTICUT

Prepared for
HPC Wireless/Sprint

Sprint Site #CT03XC090

June 4, 2014



APT Project #CT255810

□ 3 SADDLEBROOK DRIVE · KILLINGWORTH, CT 06419 · PHONE 860-663-1697 · FAX 860-663-0935
⊗ 116 GRANDVIEW ROAD · CONWAY, NH 03818 · PHONE 603-496-5853 · FAX 603-447-2124

STRUCTURAL ANALYSIS REPORT
of
188' ROHN SSV TOWER
EAST WINDSOR, CONNECTICUT
prepared for
HPC Wireless/Sprint

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of the existing 188-foot self-supporting ROHN SSV tower. The analysis was performed for the proposed Sprint equipment modification which entails the replacement of six (6) existing Allgon 7184.05 panel antennas and six (6) 1-5/8" diameter coaxial cables with three (3) RFS APXVTM14-C-120 panel antennas and three (3) remote radio head (RRH) units, supported on three (3) existing boom gate mounts at 123' as detailed below. The proposed equipment shall be fed by one (1) 5/8" diameter hybrid fiber cable routed within the existing Sprint waveguide ladder located on the Northwest face of the tower.

Our analysis indicates that the tower **does not** meet the requirements of the Connecticut State Building Code and TIA/EIA-222-F with the proposed antenna modifications. Reinforcement of the tower is required, details of which are discussed within the 'Conclusions and Recommendations' section of this report. The following table summarizes the results of the analysis:

Loading Condition	Leg Capacity	Bracing Capacity	Member Bolt Capacity
Proposed	68%	94%	124.6%

INTRODUCTION:

A structural analysis was performed on the above-mentioned communications tower by APT for Sprint. The tower is located at 236 South Main Street, East Windsor, Connecticut and is the easterly of two self-supporting towers located at the site.

The structure is a 188-foot ROHN Model SSV galvanized steel self-supporting tower designed circa 1996. Tower mapping and inventory was conducted by WesTower on behalf of APT on May 13, 2014 to record information regarding physical and dimensional properties of the structure and its appurtenances. This analysis also relied on a previous structural analysis

prepared by Ramaker & Associates, Inc., for Sprint (Ramaker Job No. 22997), dated April 9, 2014.

The analysis was performed in accordance with the Connecticut State Building Code and EIA/TIA-222-F using the following antenna inventory (proposed changes shown in **bold** text):

Antenna	Elev.	Leg/Face	Mount	Coax.
Antel BCD-87010N Omni whip	195'	E	Rotatable platform	(1) 1/4"
Diamond X-50NA Omni Whip	195'	W	Rotatable platform	(1) 1/2"
(3) RFS APXV18-206517 panel antennas	176'	All	Leg	(6) 1-5/8"
(6) Andrew SBNH-1D6565C, panel antennas, (3) Kathrein 800-10121 panel antennas, (3) Ericsson RRUS 11, (3) Powerwave LGP18601 and (3) CCI DTMABP7819VG12A TMA's.	168'	All	(3) Rohn 6'x15' Boom Gates	(12) 1-1/4", (2) #8 AWG, (1) RG6 Fiber
(6) EMS RR90-17-02DP panel antennas, (3) RFS APX16DWV-DWVS panel antennas and (6) TMA's.	155'	All	(3) 12-ft Universal Sector Frames	(18) 1-1/4"
(3) RFS APL868013-42T0 panel antennas, (6) Antel BXA-70063/6CF panel antennas, (3) RYMSA MGD3-800T0 panel antennas	141'	All	(3) Rohn 6'x20' Boom Gates	(15) 1-5/8"
(2) RFS APXV9ERR18-C-A20, panel antennas, (1) RFS APXVSPP18-C-A20 panel antennas, (3) ALU 1900MHz 4X40W RRH's and (3) ALU 800MHz 2x50W RRH's [1]	123'	All	(3) Rohn 6'x15' Boom Gates	(3) RFS Hybriflex 1-1/4" cables
(3) RFS APXVTM14-C-120 panel antennas and (3) TD-RRH-8X20-25 Remote Radio Heads	**123'**	**All**	Same as above	**(1) RFS HB114-1-08U4-M5J RRH Hybrid Fiber Cable, (3) Commscope ATCB-B01-006 AISG Control Cables and (27) Jumper cables**

[1] Six (6) existing Allgon 7184.05 panel antennas and six (6) 1-5/8"dia. coax feed-lines to be removed.

STRUCTURAL ANALYSIS:

Methodology: The structural analysis was done in accordance with EIA/TIA-222-F (EIA), Structural Standards for Steel Antenna Towers and Antenna Supporting Structures; and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, Ninth Edition.

The analysis was conducted using a basic wind speed of 80 miles per hour (fastest mile) with no ice and 69 miles per hour with 1/2" inch radial ice over the entire structure and all appurtenances. The EIA/TIA Standard requires a minimum wind speed of 80 miles per hour for Hartford County, Connecticut. The tower was analyzed by calculating the resultant wind loading and associated maximum bending moments, shear forces, and axial loads. The moments and forces were used to calculate stresses in leg and bracing members, which were compared to allowable stresses according to AISC.

Two loading conditions were evaluated in accordance with EIA to determine the tower's capacity. The more demanding of the two cases is used to calculate the tower capacity:

- Case 1 = Wind Load (without ice) + Tower Dead Load
- Case 2 = 0.75 Wind Load (with ice) + Ice Load + Tower Dead Load

In addition, the TIA/EIA standard permits a one-third increase in allowable stresses for towers less than 700-feet tall. Allowable stresses of tower members were increased by one-third when computing the load capacity values shown below.

Analysis: Analysis of the tower was conducted in accordance with the criteria outlined herein with equipment as previously described. The following table summarizes the results of the analysis based on stresses of individual leg and bracing members:

Elevation	Leg Capacity	Bracing Capacity
180'-188'	7%	10%
160'-180'	37%	76%
140'-160'	54%	44%
120'-140'	56%	54%
100'-120'	55%	76%
80'-100'	69%	80%
60'-80'	69%	55%
40'-60'	65%	63%
20'-40'	58%	84%
0'-20'	66%	93%

Splice, Bracing and Anchor Bolts:

Connection bolts were evaluated under the proposed loading. The diagonal member to leg connection bolts within tower sections T9 (20'-40') and T10 (0'-20') were **NOT** found to be structurally adequate and require reinforcement.

Elevation	Controlling Load Effect	Bolt Capacity
20'-40' (T9)	Bolt Shear	106.7%
0'-20' (T10)	Bolt Shear	124.6%
Anchor Bolts	Tension	48.2%

Base Foundations:

Evaluation of the base foundation was limited to a comparison of the reactions calculated under the proposed loads with design reactions indicated on the original ROHN assembly drawings referenced by Ramaker (ROHN project number SS-974, dated October 25,2000). Reactions imposed by the proposed additions are less than design reactions, indicating the foundation is adequately sized.

Reaction	Original Design	Calculated
Leg Compression	379.0 k	292 k
Leg Uplift	292.0 k	226 k
Leg Shear	42.7 k	28 k
Base Shear	63.8 k	55 k
OTM	6970.7 ft-k	5716 ft-k

CONCLUSIONS AND RECOMMENDATIONS:

Our structural analysis indicates the 188-foot ROHN SSV tower located at 236 South Street, East Windsor, Connecticut **does not** meet the requirements of the Connecticut State Building Code with Sprint's proposed equipment modification and requires reinforcement.

Tower reinforcement remedial work recommendations are as follows:

1. Replacement of all seventy-two (72) existing ¾" diameter A325-N diagonal member to leg connection bolts between tower sections T9 and T10 (0' to 40') with ¾" diameter A325-X type bolts (threads excluded from shear plane).

The above recommendations are not intended to serve as a specification for remedial items. Site specific engineering design documents for the above noted remedial work item(s) can be provided upon request.

LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing leg members in any manner.
3. Installing antenna mounts or side arms.
4. Extending tower.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

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

Sprint Existing Facility

Site ID: CT03XC090

Balch Tower

236 South Main Street
East Windsor, CT 06088

May 30, 2014

EBI Project Number: 62143108

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

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May 30, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC090 - Balch Tower

Site Total: 45.01% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 236 South Main Street, East Windsor, 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 97-01and 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 (850 MHz Band) is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz and 2500 MHz bands 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 236 South Main Street, East Windsor, 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) 3 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.

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6) The antennas used in this modeling are the RFS APXVSPP18-C-A20, RFS APXV9ERR18-C-A20 and the RFS APXVTM14-C-I20. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 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 APXV9ERR18-C-A20 has a 14.9 dBd gain value at its main lobe at 1900 MHz and 11.9 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 **123 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	CT03XC090 - Balch Tower
Site Addresss	236 South Main Street, East Windsor, CT, 06088
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)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	5.9	123	117	1/2 "	0.5	3	104.27	0.27%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	123	117	1/2 "	0.5	3	19.54	0.09%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	123	117	1/2 "	0.5	3	69.51	0.32%
														Sector total Power Density Value:		0.69%

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)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXV9ERR18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	4.9	123	117	1/2 "	0.5	3	82.82	0.22%
2a	RFS	APXV9ERR18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	1.9	123	117	1/2 "	0.5	3	13.84	0.06%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	123	117	1/2 "	0.5	3	69.51	0.32%
														Sector total Power Density Value:		0.60%

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)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXV9ERR18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	4.9	123	117	1/2 "	0.5	3	82.82	0.22%
3a	RFS	APXV9ERR18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	1.9	123	117	1/2 "	0.5	3	13.84	0.06%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	123	117	1/2 "	0.5	3	69.51	0.32%
														Sector total Power Density Value:		0.60%

Site Composite MPE %	
Carrier	MPE %
Sprint	1.89%
AT&T	15.20%
MetroPCS	3.88%
Town	1.68%
Nextel	2.27%
T-Mobile	3.64%
Verizon Wireless	16.45%
Total Site MPE %	**45.01%**

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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 **1.89% (0.69% from sector 1, 0.60% from sector 2 and 0.60% 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 **45.01%** 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

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