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



June 12, 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 <u>15 Chamberlain Road (aka 11 Chamberlain Road)</u>, Broad Brook (East Windsor), 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 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, a Water Tank owned by Crop Production Services, Inc., and located at 15 Chamberlain Road (aka 11 Chamberlain Road), Broad Brook (East Windsor) (coordinates 41°-53'-52.33" N, 72°-33'-7.28" 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. 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. Sprint will remove the existing six (6) CDMA antennas and add three (3) panel antennas and six (6) RRHs (remote radio heads), and three (3) hybriflex cables as part of a prior modification. In this instance Sprint will also add an additional three (3) panel antennas for a total of nine (9) antennas, and three (3) 2.5 RRHs (remote radio heads)

Boston 3

Raleigh

mounted to the existing pipe mast on the Water Tank handrail, for a total of nine (9) RRHs, all at a centerline height of approximately 104' AGL. Sprint will also install one (1) more hybriflex cable to the existing Ice Bridge, vertically supported off of the leg of the Water Tank, for a total of four (4) hybriflex cables. The proposed modifications will not extend the height of the approximately 125' structure.

2. Sprint will place new batteries in two (2) of the three (3) existing cabinets, all on the existing concrete pad with canopy. There will be no increase to the $20' \times 9'$ leased area. These changes will have no effect on the site boundaries.

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

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by EBI Consulting, Sprint's operations at the site will result in a power density of approximately 2.54%; the combined site operations will result in a total power density of approximately 27.30%.

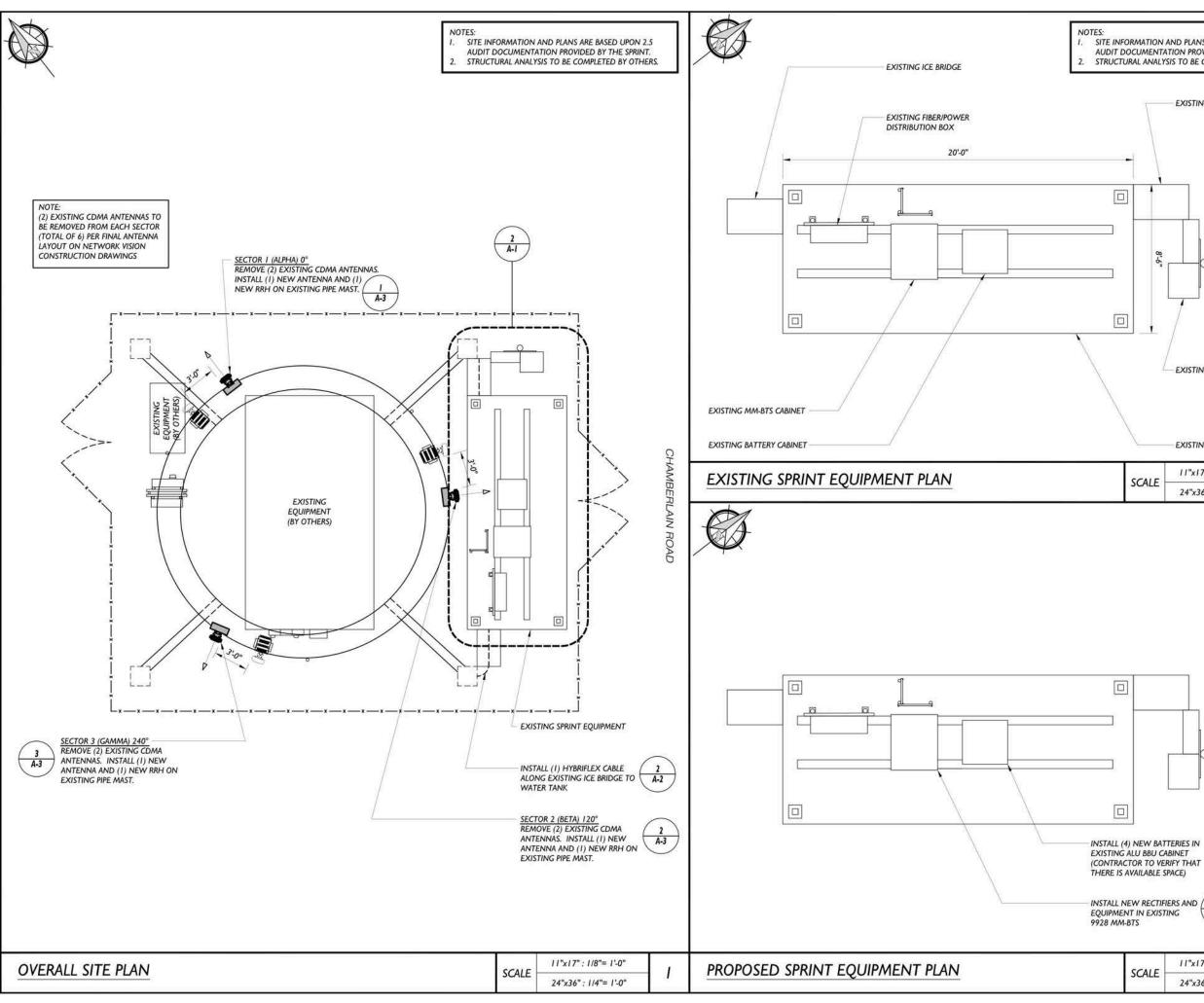
Please contact me by phone at (203) 610-1071 or by e-mail at <u>mjhowlett@optonline.net</u>with questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Melanie J. Howlett

Attachments

cc: Honorable Denise Menard, First Selectman, Town of East Windsor Crop Production Services, Inc. (underlying property owner)



SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE SPRINT. STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS. EXISTING ICE BRIDGE REVISED PER CLIENT COMMENTS KLR 01 3-12-14 CM INITIAL SUBMISSION 00 3.4.14 СМ KLR REVISION DESCRIPTION DRAWN CHKD. BY BY REV. DATE 9-6 Sprint 6580 SPRINT PARKWAY OVERLAND PARK, KANSAS 66251 (517) 436-7466 - EXISTING PPC CABINET EXISTING CONCRETE PAD A SAXON DESIGN GROUP 244 RIVERS EDGE LANE TOMS RIVER, NJ 08755 (732) 678-0155 11"x17" : 3/16" = 1'-0" 2 24"x36" : 3/8" = 1'-0" ENGINEER'S LICENSE MICHAEL L. BOHLINGER COTICUS PROFY PROFESSIONAL ENGINEER CONNECTICUT LICENSE No. 20405 ASDG PROJECT ASDGSP23 CLIENT ID No: CT33XC565 DESIGN TYPE: 2.5 GHz SITE INFORMATION BROADBROOK WATER TANK 15 CHAMBERLAIN ROAD BROADBROOK, CT 06016 DRAWING TITLE SITE PLAN

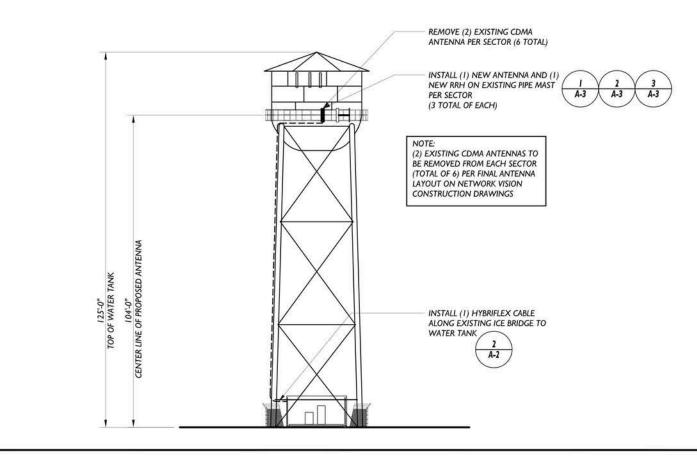
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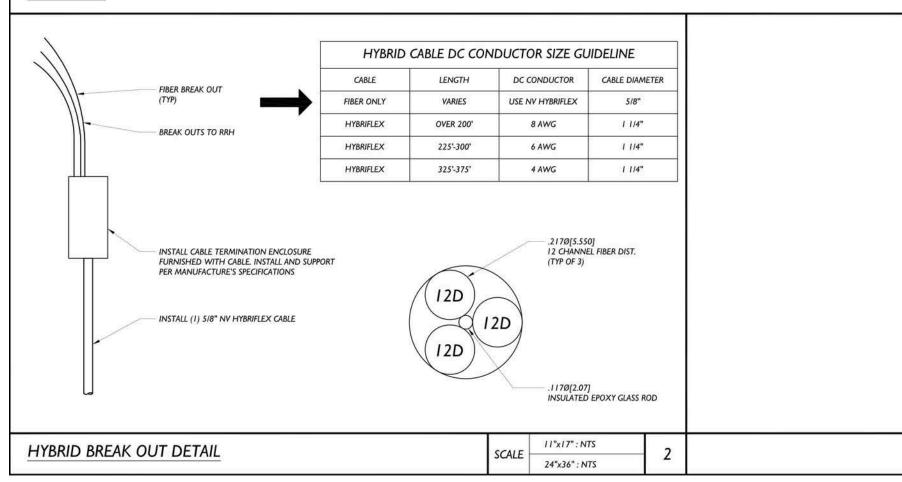
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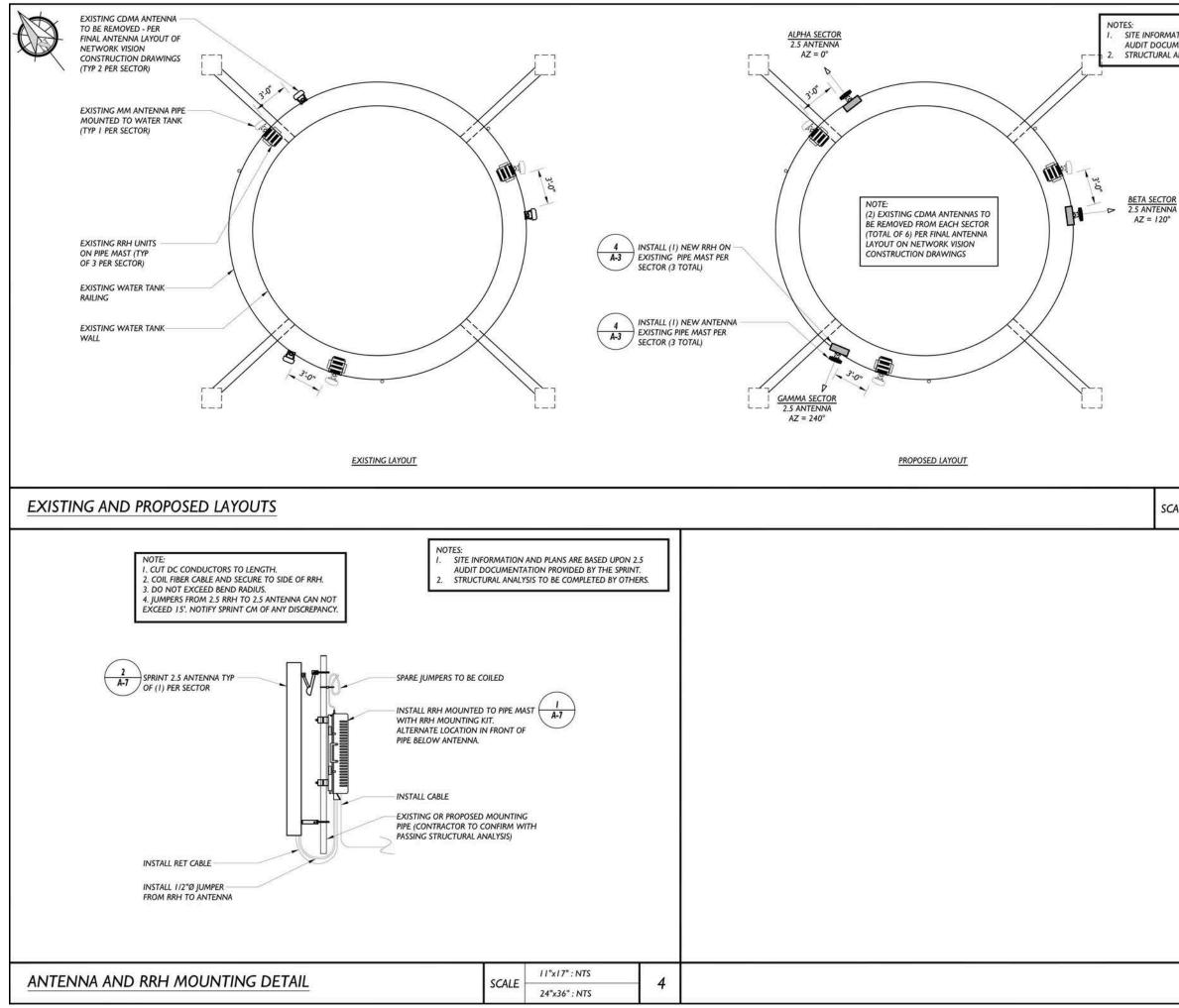
2.5 - CT33XC565



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	CLIENT ID No: CT33XC565					
	DESIGN TYPE: 2.5 GHz					
	SITE INFORMATION: BROADBROOK WATER TANK 15 CHAMBERLAIN ROAD BROADBROOK, CT 06016					
	BUILDING ELEVATION AND CABLE PLAN					
	MICHAEL L BOHUNGER CT LICENSE No. 20405 DATE: 3:4-14					
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2.5 - CT33XC565 SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE SPRINT. STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS. REVISED PER CLIENT COMMENTS KLR 01 3-12-14 CM INITIAL SUBMISSION 00 3.4.14 СМ KLR REVISION DESCRIPTION DRAWN CHKD. BY BY REV. DATE Spri 6580 SPRINT PARKWAY OVERLAND PARK, KANSAS 66251 (517) 436-7466 A SAXON DESIGN GROUP 244 RIVERS EDGE LANE TOMS RIVER, NJ 08755 (732) 678-0155 11"x17" : 1/8" = 1'-0" ENGINEER'S LICENSE SCALE 24"x36" : 1/4" = 1'-0" MICHAEL L. BOHLINGER ECTICUT St PROFF PROFESSIONAL ENGINEER CONNECTICUT LICENSE No. 20405 ASDG PROJECT N ASDGSP23 CLIENT ID No: CT33XC565 DESIGN TYPE: 2.5 GHz SITE INFORMATION BROADBROOK WATER TANK 15 CHAMBERLAIN ROAD BROADBROOK, CT 06016 DRAWING TITLE ANTENNA PLAN AND MOUNTING DETAILS MICHAEL L. BOHLINGER CT LICENSE No. 20405 ATE 3-4-14 PROJECT No: ASDGSP23 DRAWING BY: CD CHK BY: WG No .: A-3 x36" SHEETS - SIGN & SEAL



May 20, 2014

Ms. Debra Overbey HPC Wireless Services 22 Shelter Rock Lane Danbury, CT 06810

Re: Structural Evaluation Letter ~ Sprint Antenna Upgrade Sprint Site Ref ~ CT33XC565 Verizon Wireless Site Ref ~ Broadbrook 15 Chamberlain Road East Windsor, CT 06016

Centek Project No. 14033.005

Dear Ms. Overbey,

Centek Engineering Inc., has reviewed the proposed Sprint antenna upgrade at the above referenced site. The purpose of the review is to determine the structural adequacy of existing 125-ft +/- tall AGL water tank structure to support the proposed modified antenna configuration. The existing installation consists of three (3) antenna pipe mounts per sector (total of nine) mounted to the existing water tank handrail. The review considered the effects of wind load, dead load, ice load and seismic forces in accordance with the 2005 Connecticut State Building Code as amended by the 2009 Connecticut State Supplement. Refer to Sprint construction drawings prepared by A Saxon Design Group., marked Rev. 1, dated 3/12/14 for mounting configuration.

The existing and proposed loads considered in this analysis consist of the following:

<u>Verizon (Existing/Reserved):</u>

Antennas: Six (6) Antel LPA-80063-6CF panel antennas, six (6) Antel BXA-70063-6CF panel antennas, six (6) LPA-171063-12CF panel antennas, six (6) RRH's and one (1) RFS DB-T1-6Z-8AB-0Z main distribution box pipe mounted to the side of the water tank with a RAD center elevation of 116-ft +/- AGL.

<u>Coax:</u> Eighteen (18) 1-5/8-in dia. coaxial cables and one (1) 1-5/8-in dia. fiber cable vertically supported off the leg/face of the existing water tank structure.

<u>MetroPCS (Existing</u>)

<u>Antennas:</u> Three (3) RFS APXV18-206417S-C panel antennas pipe mounted to the existing water tank handrail with RAD center elevation of 106-ft +/- AGL.

<u>Coax Cables</u>: Six (6) 1-5/8" dia. coaxial cables vertically supported off the leg of the existing water tank structure.

MISC (Existing)

<u>GPS:</u> One (1) GPS antenna mounted to the structure with a RAD center elevation of 35-ft +/-AGL and (1) GPS antenna mounted to the water tank leg with a RAD center elevation of 77-ft +/-AGL.

<u>Coax Cables:</u> Two (2) 1/2" dia. coax cables (estimated) vertically supported off the leg of the existing water tank structure.

Structural Evaluation Letter ~ Sprint Antenna Upgrade Sprint Site Ref ~ CT33XC565 Verizon Wireless Site Ref ~ Broadbrook 15 Chamberlain Road East Windsor, CT 06016

- <u>SPRINT (Existing to Remain):</u> <u>Antennas:</u> Three (3) RFS APXVSPP18-C-A20 panel antennas, three (3) 1900MHz 4X40W RRH's and three (3) 800MHz 2X50W RRH's pipe mounted to the existing water tank handrail with a RAD center elevation of 104-ft +/- AGL. <u>Coax Cables</u>: Three (3) 1-1/4" dia. Hybriflex hybrid cables vertically supported off the leg of the existing water tank structure.
- <u>SPRINT (Proposed):</u> <u>Antennas:</u> Three (3) RFS APXVTM14-C-I20 panel antennas and three (3) TD-RRH8x20-25 Remote Radio Heads pipe mounted to the existing water tank handrail with a RAD center elevation of 104-ft +/- AGL.
 <u>Coax Cables</u>: One (1) 1-1/4" dia. Hybriflex hybrid cables vertically supported off the leg of the existing water tank structure.
 - 1. Note: The proposed Remote Radio Heads (RRH) shall be mounted directly behind the above noted panel antennas.

The proposed antenna installation meets the requirements of the 2005 Connecticut State Building Code considering the basic wind speed (3-second gust) of 95 mph as required in Appendix K of the Connecticut supplement per Table 1609.3.1. Our findings are based on the assumption that the hosting structure, all structural members and appurtenances were properly designed, detailed, fabricated, installed and have been properly maintained since erection.

In conclusion, the proposed Sprint antenna upgrade will not negatively impact the structural integrity of the existing antenna support structure or host water tank. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Carlo F. Centore, PE

Principal ~ Structural Engineer



2.5 - CT33XC565



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

Sprint Existing Facility

Site ID: CT33XC565

Broadbrook Water Tank

15 Chamberlain Road Broadbrook, CT 06016

June 6, 2014

EBI Project Number: 62143319



June 6, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site: CT33XC565 - Broadbrook Water Tank

Site Total: 27.30% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 15 Chamberlain Road, Broadbrook, 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 (μ W/cm2). The number of μ W/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.

<u>General population/uncontrolled exposure</u> 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 (μ W/cm²). The general population exposure limit for the cellular band (850 MHz Band) is approximately 567 μ W/cm², and the general population exposure limit for the 1900 MHz and 2500 MHz bands is 1000 μ W/cm². 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.



<u>Occupational/controlled exposure</u> 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 their exposure and can exercise control over the potential for exposure and can exercise control over the potentia

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 15 Chamberlain Road, Broadbrook, 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) 2 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 RFS APXVSPP18-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 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 **104 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	CT33XC565	1													
	Site Addresss	15 Chamberlain Road, Broadbrook, CT, 06016														
	Site Type	Water Tank														
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	Sector 1															
						Power										
						Out Per			Antenna Gain							Power
Antenna						Channel	Number of	Composite	(10 db	Antenna	analysis		Cable Loss			Density
Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	(Watts)	Channels	Power	reduction)	Height (ft)	height	Cable Size		Loss (dB)	ERP	Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	104	98	1/2 "	0.5	3	69.51	0.26%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	104	98	1/2 "	0.5	3	19.54	0.13%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	104	98	1/2 "	0.5	3	69.51	0.46%
Sector total Power Density Value: 0.										0.85%						
	1				1	1	Sector 2	r			-	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
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	104	98	1/2 "	0.5	3	69.51	0.26%
2a 2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	104	98	1/2 "	0.5	3	19.54	0.13%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	104	98	1/2 "	0.5	3	69.51	0.46%
													otal Power D	Density Value:	0.85%	
							Sector 3							,		
						Power Out Per			Antenna Gain							Power
Antenna						Channel	Number of	Composite	(10 db	Antenna	analysis		Cable Loss	Additional		Density
Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	(Watts)	Channels	Power	reduction)	Height (ft)	height	Cable Size	(dB)	Loss (dB)	ERP	Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	5.9	104	98	1/2 "	0.5	3	69.51	0.26%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	104	98	1/2 "	0.5	3	19.54	0.13%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	104	98	1/2 "	0.5	3	69.51	0.46%
	Sector total Power Density Value: 0.85%															

Site Composite MPE %					
Carrier	MPE %				
Sprint	2.54%				
MetroPCS	5.99%				
Verizon Wireless	18.77%				
Total Site MPE %	27.30%				



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 2.54% (0.85% from sector 1, 0.85% from sector 2 and 0.85% 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 **27.30%** 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

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