

EM-SPRINT-009-130322

38 Spring Hill Road

Bethel



RECEIVED
JUL 10 2014

1 Robbins Road
Westford, MA 01886

July 9, 2014

State of Connecticut
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

CONNECTICUT
SITING COUNCIL

RE: Notification of Construction Completion on telecommunication facilities

To whom it may concern:

Alcatel Lucent hereby acknowledges that the list of attached sites have completed construction per the approval granted on the specified date. Please advise if further information is needed..

Very truly yours,

Martha Powers

Martha Powers
Lead Development Manager
Alcatel-Lucent
Sprint Vision Project
1 Robbins Road
Westford, MA 01886

Cc: FST, Siterra

EM/TS#	Address	Town	Sprint ID	Decision Date
EM-SPRINT-062-130912	1065 Wintergreen Avenue	Hamden	CT03XC003	10/15/2013
EM-SPRINT-NEXTEL-060-130118	10 Tanner Marsh Road	Guilford	CT03XC022	2/14/2013
EM-SPRINT-004-130822	181 Montevideo Road	Avon	CT03XC053	9/6/2013
EM-SPRINT-NEXTEL-155-130214	1358 New Britain Ave.	West Hartford	CT03XC057	3/1/2013
EM-SPRINT-NEXTEL-164-130201	440 Hayden Station Road	Windsor	CT03XC065	3/8/2013
EM-SPRINT-NEXTEL-132-130201	59 McGuire Road	South Windsor	CT03XC066	3/1/2013
EM-SPRINT-NEXTEL-054-130201	299 Paxton Way	Glastonbury	CT03XC081	3/1/2013
EM-SPRINT-NEXTEL-094-130214	36 Prospect Street	Newington	CT03XC084	3/1/2013
EM-SPRINT-110-130725	10 Sparks Street	Plainville	CT03XC086	8/8/2013
EM-SPRINT-007-130314	260 Beckley Road	Kensington	CT03XC088	4/5/2013
EM-SPRINT-NEXTEL-155-130201	570 New Park Avenue	West Hartford	CT03XC091	3/1/2013
EM-SPRINT-NEXTEL-106-130201	430 Middlesex Turnpike	Old Saybrook	CT03XC102	3/1/2013
EM-SPRINT-NEXTEL-105-130201	30 Short Hills Road	Old Lyme	CT03XC104	3/1/2013
EM-SPRINT-NEXTEL-152-130201	41 Manitock Hill Road	Waterford	CT03XC105	3/1/2013
EM-SPRINT-NEXTEL-045-130201	93 Roxbury Road	East Lyme	CT03XC110	3/1/2013
EM-SPRINT-152-130114	45R Fargo Road	Waterford	CT03XC112	2/14/2013
EM-SPRINT-NEXTEL-027-130201	48 Cow Hill Road	Clinton	CT03XC156	3/1/2013
EM-SPRINT-NEXTEL-082-130201	238 Meridan Road	Middlefield	CT03XC160	3/8/2013
EM-SPRINT-047-130109	160 Plantation Road	East Windsor	CT03XC202	2/7/2013
EM-SPRINT-NEXTEL-077-130214	53 Slater Street	Manchester	CT03XC211	3/1/2013
EM-SPRINT-142-130109	497 Old Post Road	Tolland	CT03XC212	2/7/2013
EM-SPRINT-NEXTEL-042-130222	94 East High Street	East Hampton	CT03XC335	3/8/2013
EM-SPRINT-057-121226	Butternut Hollow Road	Greenwich	CT03XC343	1/11/2013
EM-SPRINT-158-130213	515 Boston Post Road	Westport	CT03XC355	3/1/2013
EM-SPRINT-046-130402	206 Everett Road	Easton	CT03XC362	4/19/2013
EM-SPRINT-085-130322	474 MAIN STREET	MONROE	CT03XC365	4/5/2013
EM-SPRINT-086-131011	57 Cook Drive	Montville	CT03XC365	10/25/2013
EM-SPRINT-118-130322	76 EAST RIDGE	RIDGEFIELD	CT03XC370	4/5/2013
EM-SPRINT-097-131230	20 Barnabas Road	Newtown	CT03XC383	1/21/2014
EM-SPRINT-051-130207	3965 Congress Street	Fairfield	CT03XC385	3/1/2013
EM-SPRINT-NEXTEL-094-130214	123 Costello Road	Newington	CT23XC555	3/1/2013
EM-SPRINT-119-131008	699 Old Main Street	Rocky Hill	CT23XC556	10/25/2013
EM-SPRINT-077-131008	60 Adams Street	Manchester	CT23XC557	10/25/2013
EM-SPRINT-NEXTEL-080-130123	462 West Main Street	Meriden	CT25XC840	2/14/2013
EM-SPRINT-096-130920	18 Hilltop View Lane	New Milford	CT33XC095	10/4/2013
EM-SPRINT-157-130213	237 Godfrey Road	Weston	CT33XC522	3/1/2013
EM-SPRINT-018-131008	20 Vale Road	Brookfield	CT33XC525	10/25/2013
EM-SPRINT-077-130528	595 Keeney Street	Manchester	CT33XC538	6/14/2013
EM-SPRINT-NEXTEL-129-130214	400 Main Street	Somers	CT33XC554	3/1/2013
EM-SPRINT-047-130322	15 CHAMBERLAIN	BROADBROOK	CT33XC565	4/5/2013
EM-SPRINT-004-130502	277 Huckleberry Road	Avon	CT33XC589	5/17/2013

EM-SPRINT-143-130604	218 Wheeler Road	Torrington	CT33XC592	6/28/2013
EM-SPRINT-140-130724	583 Chapel Street	Thomaston	CT33XC603	8/8/2013
EM-SPRINT-103-130920	Charles Marshall Drive	Norwalk	CT33XC802	10/4/2013
EM-SPRINT-NEXTEL-064-130214	439-455 Homestead Ave.	Hartford	CT43XC805	3/1/2013
EM-SPRINT-064-130311	99 Meadow Street	Hartford	CT43XC806	4/5/2013
EM-SPRINT-083-131127	290 Preston Ave.	Middletown	CT43XC816	12/16/2013
EM-SPRINT-128-130920	530 Bushy Hill Road	Simsbury	CT43XC825	10/4/2013
EM-SPRINT-164-130405A	340 Bloomfield Avenue	Windsor	CT43XC826	4/19/2013
EM-SPRINT-077-130109	239 Middle Turnpike	Manchester	CT43XC827	2/13/2013
EM-SPRINT-165-130118	2-4 Volunteer Drive	Windsor Locks	CT43XC828	2/14/2013
EM-SPRINT-NEXTEL-139-130214	44 Fyler Place	Suffield	CT43XC829	3/8/2013
EM-SPRINT-111-130712	171 Town Hill Road	Plymouth	CT54XC712	7/26/2013
EM-SPRINT-009-130322	38 Spring Hill Road	Bethel	CT54XC749	4/5/2013
EM-SPRINT-154-131011	315 Spencer Plains Road	Westbrook	CT54XC758	10/25/2013
EM-SPRINT-023-130405	14 Canton Springs Road	Canton	CT54XC760	4/19/2013
EM-SPRINT-104-130606	153 Old Salem Road	Norwich	CT54XC775	6/28/2013
EM-SPRINT-164-130405B	99 Day Hill Road	Windsor	CT54XC787	4/19/2013
EM-SPRINT-132-130920	300 Governor's Highway	South Windsor	CT60XC014	10/4/2013
EM-SPRINT-094-130108	605 Willard Avenue	Newington	CT60XC018	1/25/2013
EM-SPRINT-146-130506	197 South Street	Vernon	CT60XC935	5/24/2013
EM-SPRINT-146-130311	777 Talcottville Road	Vernon	CT70XC147	4/5/2013
EM-SPRINT-126-130531	62 Birdseye Road	Shelton	CT73XC004	6/21/2013



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

April 5, 2013

Jennifer Young Gaudet
HPC Wireless Services
46 Mill Plain Road, Floor 2
Danbury, CT 06811

RE: **EM-SPRINT-009-130322** – Sprint Spectrum L.P. notice of intent to modify an existing telecommunications facility located at 38 Spring Hill Road, Bethel, Connecticut.

Dear Ms. Gaudet:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 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 March 21, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the

closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,



Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Matthew S. Knickerbocker, First Selectman, Town of Bethel
Steve Palmer, Planning & Zoning Official, Town of Bethel
Spring Hill Lane Properties, LLC



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

March 22, 2013

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

RE: **EM-SPRINT-009-130322** – Sprint Spectrum L.P. notice of intent to modify an existing telecommunications facility located at 38 Spring Hill Road, Bethel, Connecticut.

Dear First Selectman Knickerbocker:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by April 5, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

A handwritten signature in black ink that reads "L. Roberts".

Linda Roberts
Executive Director

LR/cm

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

HPC Wireless Services

46 Mill Plain Rd.

Floor 2

Danbury, CT, 06811

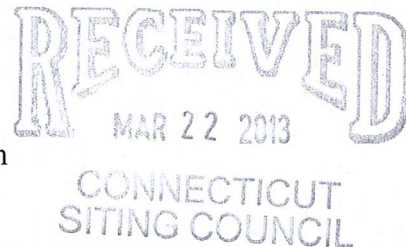
P.: 203.797.1112



March 21, 2013

VIA OVERNIGHT COURIER

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



Re: Sprint Spectrum, L.P. – exempt modification
38 Spring Hill Road, Bethel, Connecticut

Dear Ms. Roberts:

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 Bethel.

Sprint plans to modify the existing wireless communications facility owned by Spring Hill Lane Properties, LLC (successor in interest to Valley Communications, Inc.) and located at 38 Spring Hill Road in the Town of Bethel (coordinates 41°-21’-43.97”, 73°-23’-47.55”). Attached are a compound plan and elevation 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 replace six (6) existing CDMA antennas with three (3) dual-pole CDMA antennas and three (3) dual-band panel antennas at the existing center line of approximately 110’. Six (6) RRHs (remote radio heads) will be mounted to the pole

behind and below the antennas. Sprint will also install three (3) hybridflex cables along the existing coaxial cable run. After an interim period of up to one year, the three CDMA antennas and the existing coaxial cable will be removed. The proposed modifications will not extend the height of the approximately 125' structure.

2. The proposed changes will not extend the site boundaries. Sprint will replace two (2) existing cabinets and add one cabinet on the existing concrete pad. Sprint also will add a fiber distribution box, mounted on unistruts on the concrete pad. 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 standards 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 41.433%; the combined site operations will result in a total power density of approximately 83.843%.

Please feel free to contact me by phone at (860) 798-7454 or by e-mail at jgaudet@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

Respectfully yours,



Jennifer Young Gaudet

cc: Honorable Matthew S. Knickerbocker, First Selectman, Town of Bethel
Spring Hill Lane Properties, LLC (underlying property owner)

October 12, 2012

Site No. CT54XC749
Cingular
Monopole Analysis
38 Spring Hill Road
Bethel, CT 06801

Salient Associates, LLC has performed the tower analysis for the proposed Sprint antennas and equipment upgrade to be mounted on the existing monopole tower at the above referenced site. The proposed Sprint cabinets will be mounted on the existing concrete pad located on the ground at the above referenced site. The analysis was conducted using the IBC2003 w/ State Building Code 2005 Connecticut Supplement and TIA/EIA 222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures. This analysis is based on the following load case:

Existing Tower Loading and Sprint Interim Equipment (Existing + Proposed)

Three (3) RFS multimodal antenna APXVSP18-C-A20 for sector Alpha, Beta & Gamma with (1) 1900MHz and (1) 800MHz RRH units per sector (Total of 3 antennas and 6 RRHs) will replace the existing CDMA antennas (Total of 6 antennas). The existing BTS equipment cabinets located on the existing concrete pad on the ground will be replaced with one (1) Alcatel-Lucent outdoor BTS equipment cabinet 9928 (1390 lbs.) and two (2) battery backup cabinets 60ECv2 (2830 lbs. each).

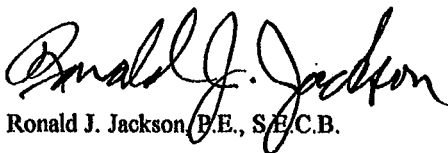
The structural analysis was performed without doing any tower mapping. We relied on the information found on Sprint Siterra (EBI previous structural analysis dated 03/23/05) and the information collected during the site audit.

Based on the results of our attached structural analysis, the existing 125' monopole does meet the requirements of TIA/EIA 222-F standards for basic wind speed of 85 mph and a wind speed of 74 mph used in combination with 0.5" of radial ice after the following modification is implemented:

- Add (12) PL ½ x 6 ½ x 20 Stiffeners (A572 Gr. 50) centered between each anchor bolt.

Based on EBI foundation analysis dated 03/25/05 and the tower actual reactions of the applied loads, it was concluded that existing foundation is structurally capable of supporting the additional loads. Please contact this office for any questions regarding this structural analysis.

Sincerely,


Ronald J. Jackson, P.E., S.E.C.B.



October 24, 2012

CT54XC749
Monopole Analysis
38 Spring Hill Road
Bethel, CT 06801

PROJECT: SPRINT NETWORK VISION
SUBJECT: STRUCTURAL ASSESSMENT (EVALUATION) LETTER
SITE ID NO.: CT54XC749 (1- Non - MLA TOWER SITE)

Salient Associates, LLC, is pleased to submit this Structural Assessment Letter for the subject site.

The applicable codes are as follows:

- IBC2003 w/ State Building Code 2005 Connecticut Supplement
- TIA/EIA 222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

The structural analysis/ PE certification completed by Salient Associates, LLC on behalf of ALU was inclusive of the tower platform, tower mast, tower arms, and all other aspects of the structure at the antenna level that will support the Sprint Network Vision Antennas and RRH's deployment along with the interim phase CDMA antennas.

Based on our evaluation, we have determined that, in general, structural designs to support the proposed Sprint Antennas and RRH's within or near the proposed location can be completed and components installed (see below as to whether or not structural upgrades were required) to the existing antenna mounts along with the interim phase CDMA antennas. Salient Associates reviewed the previous structural analysis report by (see below) and field photographs to determine this assessment. See the Salient Associates Construction Drawings dated (see below) for the proposed equipment and locations.

Site ID No.	Site Address	MLA Owner	Date of Previous MLA Structural Analysis Report	Date of Salient's Construction Drawings	Structural Upgrade Required: Yes/No
CT54XC749	38 Spring Hill Road	N/A	N/A	10/17/12	No

Salient Associates, LLC.

New Jersey Office: 8 E Palisade Avenue, Englewood, NJ 07631. Phone: 201-567-0032 | Fax: 201-567-9556

This determination was based on the following limitations and assumptions:

1. Equipment and locations should not deviate from the construction drawings without written approval of the Engineer.
2. Salient Associates is not responsible for any modifications completed prior to and hereafter, for which Salient Associates was not directly involved.
3. All tower structural members and their connections are assumed to be in good condition and free from defects with no physical deterioration that will reduce any member's load carrying capacity.
4. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.

Please contact this office should you have any questions regarding this matter.

Very Truly Yours,



Ronald J. Jackson, P.E., S.E.C.B.
M: (774) 266-5050



Salient Associates, LLC.

New Jersey Office: 8 E Pallsade Avenue, Englewood, NJ 07631. Phone: 201-567-0032 | Fax: 201-567-9556

124.0 R

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DB810K	124	(2) APX16PV-16PVL-C (T-Mobile)	100
EEL Band-On 12' Low Profile Platform w/12 pipe (ATI)	120	(2) ATMAA1412D-1A20 Twin TMA (T-Mobile)	100
(2) 7770.00 (ATI)	120	(2) ATMAA1412D-1A20 Twin TMA (T-Mobile)	100
(2) 7770.00 (ATI)	120	(2) ATMAA1412D-1A20 Twin TMA (T-Mobile)	100
(2) 7770.00 (ATI)	120	(2) ATMAA1412D-1A20 Twin TMA (T-Mobile)	100
(2) LGP 21401 TMA (ATI)	120	EEL Band-On 12' Low Profile Platform w/12 pipe (VZW)	90
(2) LGP 21401 TMA (ATI)	120	DB844G45ZAXY (VZW)	90
DB980F90E-M w/Mount Pipe (Sprint CDMA)	110	DB844G45ZAXY (VZW)	90
DB980G90E-M w/Mount Pipe (Sprint CDMA)	110	DB844G45ZAXY (VZW)	90
DB950F85T2E-M w/Mount Pipe (Sprint CDMA)	110	DB844G45ZAXY (VZW)	90
RFS APXVSP18-C 800/1900 MHz (Sprint NV)	110	LNK-6514DS-T0M (VZW)	90
RFS APXVSP18-C 800/1900 MHz (Sprint NV)	110	LNK-6514DS-T0M (VZW)	90
RFS APXVSP18-C 800/1900 MHz (Sprint NV)	110	LNK-6514DS-T0M (VZW)	90
RFS APXVSP18-C 800/1900 MHz (Sprint NV)	110	LNK-6514DS-T0M (VZW)	90
EEL Band-On 12' Low Profile Platform w/12 pipe (Sprint)	110	LNK-6514DS-T0M (VZW)	90
800 MHz RRH (Sprint NV)	105	(4) DB846G90A-XY w/Mount Pipe (Nextel)	80
800 MHz RRH (Sprint NV)	105	(4) DB846G90A-XY w/Mount Pipe (Nextel)	80
1900 MHz RRH (Sprint NV)	105	EEL Band-On 12' Low Profile Platform w/12 pipe (Nextel)	80
1900 MHz RRH (Sprint NV)	105	(4) DB846G90A-XY w/Mount Pipe (Nextel)	80
800 MHz RRH (Sprint NV)	105	EEL Band-On 12' Low Profile Platform w/12 pipe	70
EEL Band-On 12' Low Profile Platform w/12 pipe (T-Mobile)	100	SRL210-4	70
(2) APX16PV-16PVL-C (T-Mobile)	100		
(2) APX16PV-16PVL-C (T-Mobile)	100		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

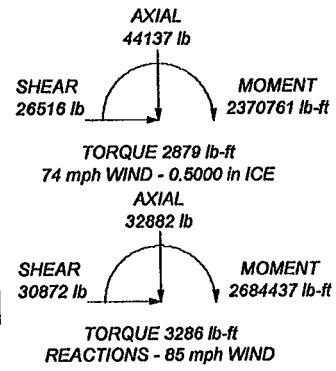
1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
6. TOWER RATING: 96.3%

Section	1	2	3
Length (ft)	28.96	52.29	52.33
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2500	0.3125
Socket Length (ft)	3.62	5.67	39.0505
Top Dia (in)	18.0000	25.3213	55.0000
Bot Dia (in)	26.5000	41.2800	8251.0
Grade		A572-65	
Weight (lb)	1305.6	4666.4	14223.0

95.0 R

46.7 R

0.0 R



 Architecture Engineering	Salient Associates LLC 15 New England Executive Park Burlington, MA 01803 Phone: (781) 791-5019 FAX: (781) 791-5018		Job: CT54XC749 (Cingular); Bethel, CT Project: 125' monopole Client: Sprint/Alcatel-Lucent Code: TIA/EIA-222-F Path:		Drawn by: sabed Date: 10/15/12 Scale: NT: Dwg No. E-

SALIENT ASSOCIATES <i>Salient Associates LLC</i> 15 New England Executive Park Burlington, MA 01803 Phone: (781) 791-5019 FAX: (781) 791-5018	Job	CT54XC749 (Cingular); Bethel, CT	Page	1 of 9
	Project	125' monopole	Date	12:34:59 10/15/12
	Client	Sprint/ Alcatel-Lucent	Designed by	sabed

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 74 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

- | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retention Guys To Initial Tension Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	124.00-95.04	28.96	3.92	18	18.0000	26.9000	0.1875	0.7500	A572-65 (65 ksi)
L2	95.04-46.67	52.29	5.67	18	25.3213	41.2800	0.2500	1.0000	A572-65 (65 ksi)
L3	46.67-0.00	52.33		18	39.0505	55.0000	0.3125	1.2500	A572-65 (65 ksi)

SALIENT ASSOCIATES Salient Associates LLC 15 New England Executive Park Burlington, MA 01803 Phone: (781) 791-5019 FAX: (781) 791-5018	Job CT54XC749 (Cingular); Bethel, CT	Page 2 of 9
	Project 125' monopole	Date 12:34:59 10/15/12
	Client Sprint/ Alcatel-Lucent	Designed by sabetd

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	18.2777	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	27.3150	15.8973	1433.1421	9.4829	13.6652	104.8753	2868.1699	7.9501	4.4044	23.49
L2	26.9257	19.8941	1579.8501	8.9003	12.8632	122.8191	3161.7790	9.9489	4.0166	16.066
	41.9168	32.5573	6924.5082	14.5657	20.9702	330.2064	13858.1278	16.2817	6.8253	27.301
L3	41.4066	38.4233	7284.6316	13.7520	19.8377	367.2119	14578.8485	19.2153	6.3229	20.233
	55.8485	54.2432	20495.5041	19.4141	27.9400	733.5542	41017.9768	27.1267	9.1300	29.216

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 124.00-95.04				1	1	1		
L2 95.04-46.67				1	1	1		
L3 46.67-0.00				1	1	1		

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.2500 in
Number of bolts	12
Embedment length	60.0000 in
f _c	3 ksi
Grout space	3.2500 in
Base plate grade	A572-60
Base plate thickness	1.7500 in
Bolt circle diameter	63.0000 in
Outer diameter	69.0000 in
Inner diameter	45.0000 in
Base plate type	Stiffened Plate
Bolts per stiffener	1
Stiffener thickness	0.5000 in
Stiffener height	12.0000 in

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight klf
LDF7-50A (1-5/8 FOAM) (AT&T)	C	No	Inside Pole	120.00 - 7.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
LDF7-50A (1-5/8 FOAM) (Sprint)	C	No	Inside Pole	110.00 - 11.00	6	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	100.00 - 3.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf
(T-Mobile) LDF7-50A (1-5/8 FOAM) (VZW)	B	No	Inside Pole	90.00 - 11.00	12	No Ice 1/2" Ice	0.00 0.00	0.00 0.00
HB114-1-08U4-M5F (1 1/4") (Sprint NV)	C	No	Inside Pole	120.00 - 11.00	3	No Ice 1/2" Ice	0.00 0.00	0.00 0.00
HJ7-50A (1-5/8 AIR)	C	No	Inside Pole	124.00 - 11.00	1	No Ice 1/2" Ice	0.00 0.00	0.00 0.00
HJ5-50A (7/8 AIR)	C	No	Inside Pole	70.00 - 11.00	1	No Ice 1/2" Ice	0.00 0.00	0.00 0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	124.00-95.04	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	495.48
L2	95.04-46.67	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	426.40
		C	0.000	0.000	0.000	0.000	1464.88
L3	46.67-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	350.96
		C	0.000	0.000	0.000	0.000	1226.60

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	124.00-95.04	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	495.48
L2	95.04-46.67	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	426.40
		C		0.000	0.000	0.000	0.000	1464.88
L3	46.67-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	350.96
		C		0.000	0.000	0.000	0.000	1226.60

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	124.00-95.04	0.0000	0.0000	0.0000	0.0000
L2	95.04-46.67	0.0000	0.0000	0.0000	0.0000
L3	46.67-0.00	0.0000	0.0000	0.0000	0.0000

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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	lb	
EEL Band-On 12' Low Profile Platform w/12 pipe (Sprint)	B	None			0.0000	110.00	No Ice 1/2" Ice	39.00 50.00	39.00 50.00	2000.00 3000.00
RFS APXVSP18-C 800/1900 MHz (Sprint NV)	A	From Face	4.00 5.50 1.00		0.0000	110.00	No Ice 1/2" Ice	8.50 9.15	6.95 8.13	90.05 155.24
RFS APXVSP18-C 800/1900 MHz (Sprint NV)	B	From Face	4.00 5.50 1.00		0.0000	110.00	No Ice 1/2" Ice	8.50 9.15	6.95 8.13	90.05 155.24
RFS APXVSP18-C 800/1900 MHz (Sprint NV)	C	From Face	4.00 5.50 1.00		0.0000	110.00	No Ice 1/2" Ice	8.50 9.15	6.95 8.13	90.05 155.24
1900 MHz RRH (Sprint NV)	A	From Face	0.00 -1.00 0.00		0.0000	105.00	No Ice 1/2" Ice	2.89 3.14	2.83 3.07	59.50 84.59
1900 MHz RRH (Sprint NV)	B	From Face	0.00 -1.00 0.00		0.0000	105.00	No Ice 1/2" Ice	2.89 3.14	2.83 3.07	59.50 84.59
1900 MHz RRH (Sprint NV)	C	From Face	0.00 -1.00 0.00		0.0000	105.00	No Ice 1/2" Ice	2.89 3.14	2.83 3.07	59.50 84.59
800 MHz RRH (Sprint NV)	A	From Face	0.00 1.00 0.00		0.0000	105.00	No Ice 1/2" Ice	2.40 2.61	2.25 2.46	64.00 86.12
800 MHz RRH (Sprint NV)	B	From Face	0.00 1.00 0.00		0.0000	105.00	No Ice 1/2" Ice	2.40 2.61	2.25 2.46	64.00 86.12
800 MHz RRH (Sprint NV)	C	From Face	0.00 1.00 0.00		0.0000	105.00	No Ice 1/2" Ice	2.40 2.61	2.25 2.46	64.00 86.12
DB980F90E-M w/Mount Pipe (Sprint CDMA)	A	From Face	4.00 -5.50 1.00		0.0000	110.00	No Ice 1/2" Ice	4.37 4.96	3.95 5.04	34.05 70.69
DB980G90E-M w/Mount Pipe (Sprint CDMA)	B	From Face	4.00 -5.50 1.00		0.0000	110.00	No Ice 1/2" Ice	4.22 4.81	3.95 5.04	35.05 71.07
DB950F65T2E-M w/Mount Pipe (Sprint CDMA)	C	From Face	4.00 -5.50 1.00		0.0000	110.00	No Ice 1/2" Ice	6.60 7.27	5.90 7.01	40.55 95.17
EEL Band-On 12' Low Profile Platform w/12 pipe (Nextel)	B	None			0.0000	80.00	No Ice 1/2" Ice	39.00 50.00	39.00 50.00	2000.00 3000.00
(4) DB846G90A-XY w/Mount Pipe (Nextel)	A	From Face	4.00 0.00 0.00		0.0000	80.00	No Ice 1/2" Ice	5.23 5.78	7.53 8.72	40.95 94.97
(4) DB846G90A-XY w/Mount Pipe (Nextel)	B	From Face	4.00 0.00 0.00		0.0000	80.00	No Ice 1/2" Ice	5.23 5.78	7.53 8.72	40.95 94.97
(4) DB846G90A-XY w/Mount Pipe (Nextel)	C	From Face	4.00 0.00		0.0000	80.00	No Ice 1/2" Ice	5.23 5.78	7.53 8.72	40.95 94.97

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A ₁ Front ft ²	C _A A ₂ Side ft ²	Weight lb	
(Nextel)			0.00						
EEI Band-On 12' Low Profile Platform w/12 pipe (AT&T)	B	None		0.0000	120.00	No Ice 1/2" Ice	39.00 50.00	39.00 50.00	2000.00 3000.00
(2) 7770.00 (AT&T)	A	From Face	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	5.99 6.45	4.26 4.91	67.95 114.64
(2) 7770.00 (AT&T)	B	From Face	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	5.99 6.45	4.26 4.91	67.95 114.64
(2) 7770.00 (AT&T)	C	From Face	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	5.99 6.45	4.26 4.91	67.95 114.64
(2) LGP 21401 TMA (AT&T)	A	From Face	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.26 1.42	0.38 0.49	14.10 21.23
(2) LGP 21401 TMA (AT&T)	B	From Face	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.26 1.42	0.38 0.49	14.10 21.23
(2) LGP 21401 TMA (AT&T)	C	From Face	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.26 1.42	0.38 0.49	14.10 21.23
EEI Band-On 12' Low Profile Platform w/12 pipe (T-Mobile)	B	None		0.0000	100.00	No Ice 1/2" Ice	39.00 50.00	39.00 50.00	2000.00 3000.00
(2) APX16PV-16PVL-C (T-Mobile)	A	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	6.70 7.13	2.00 2.33	39.60 70.94
(2) APX16PV-16PVL-C (T-Mobile)	B	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	6.70 7.13	2.00 2.33	39.60 70.94
(2) APX16PV-16PVL-C (T-Mobile)	C	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	6.70 7.13	2.00 2.33	39.60 70.94
(2) ATMAA1412D-1A20 Twin TMA (T-Mobile)	A	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	1.17 1.31	0.47 0.57	13.00 20.62
(2) ATMAA1412D-1A20 Twin TMA (T-Mobile)	B	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	1.17 1.31	0.47 0.57	13.00 20.62
(2) ATMAA1412D-1A20 Twin TMA (T-Mobile)	C	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	1.17 1.31	0.47 0.57	13.00 20.62
EEI Band-On 12' Low Profile Platform w/12 pipe (VZW)	B	None		0.0000	90.00	No Ice 1/2" Ice	39.00 50.00	39.00 50.00	2000.00 3000.00
DB844G45ZAXY (VZW)	A	From Face	4.00 -3.50 0.00	0.0000	90.00	No Ice 1/2" Ice	7.00 7.41	3.97 4.34	21.00 64.04
DB844G45ZAXY (VZW)	B	From Face	4.00 -3.50 0.00	0.0000	90.00	No Ice 1/2" Ice	7.00 7.41	3.97 4.34	21.00 64.04
DB844G45ZAXY (VZW)	C	From Face	4.00 -3.50 0.00	0.0000	90.00	No Ice 1/2" Ice	7.00 7.41	3.97 4.34	21.00 64.04
DB844G45ZAXY (VZW)	A	From Face	4.00 3.50	0.0000	90.00	No Ice 1/2" Ice	7.00 7.41	3.97 4.34	21.00 64.04

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
DB844G45ZAXY (VZW)	B	From Face	0.00		0.0000	90.00	No Ice	7.00	3.97	21.00
			4.00				1/2" Ice	7.41	4.34	64.04
			3.50							
DB844G45ZAXY (VZW)	C	From Face	0.00		0.0000	90.00	No Ice	7.00	3.97	21.00
			4.00				1/2" Ice	7.41	4.34	64.04
			3.50							
LNX-6514DS-TOM (VZW)	A	From Face	0.00		0.0000	90.00	No Ice	8.38	7.13	73.10
			4.00				1/2" Ice	8.93	7.95	140.29
			-5.50							
LNX-6514DS-TOM (VZW)	B	From Face	0.00		0.0000	90.00	No Ice	8.38	7.13	73.10
			4.00				1/2" Ice	8.93	7.95	140.29
			-5.50							
LNX-6514DS-TOM (VZW)	C	From Face	0.00		0.0000	90.00	No Ice	8.38	7.13	73.10
			4.00				1/2" Ice	8.93	7.95	140.29
			-5.50							
LNX-6514DS-TOM (VZW)	A	From Face	0.00		0.0000	90.00	No Ice	8.38	7.13	73.10
			4.00				1/2" Ice	8.93	7.95	140.29
			5.50							
LNX-6514DS-TOM (VZW)	B	From Face	0.00		0.0000	90.00	No Ice	8.38	7.13	73.10
			4.00				1/2" Ice	8.93	7.95	140.29
			5.50							
LNX-6514DS-TOM (VZW)	C	From Face	0.00		0.0000	90.00	No Ice	8.38	7.13	73.10
			4.00				1/2" Ice	8.93	7.95	140.29
			5.50							
DB810K	C	From Face	0.00		0.0000	124.00	No Ice	4.08	4.08	35.00
			3.00				1/2" Ice	5.73	5.73	65.18
			0.00							
EEI Band-On 12' Low Profile Platform w/12 pipe SRL210-4	B	None			0.0000	70.00	No Ice	39.00	39.00	2000.00
							1/2" Ice	50.00	50.00	3000.00
							No Ice	9.54	9.54	45.00
	B	From Face	4.00		0.0000	70.00	1/2" Ice	11.45	11.45	109.00
5.50										
			0.00							

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 90 deg - No Ice
4	Dead+Wind 180 deg - No Ice
5	Dead+Ice+Temp
6	Dead+Wind 0 deg+Ice+Temp
7	Dead+Wind 90 deg+Ice+Temp
8	Dead+Wind 180 deg+Ice+Temp
9	Dead+Wind 0 deg - Service
10	Dead+Wind 90 deg - Service
11	Dead+Wind 180 deg - Service

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Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	124 - 95.04	22.871	11	1.5512	0.0072
L2	98.9567 - 46.6667	14.935	11	1.4229	0.0040
L3	52.3334 - 0	4.009	11	0.7212	0.0017

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
124.00	DB810K	11	22.871	1.5512	0.0072	29245
120.00	EEI Band-On 12' Low Profile Platform w/12 pipe	11	21.570	1.5382	0.0065	29245
110.00	EEI Band-On 12' Low Profile Platform w/12 pipe	11	18.352	1.4981	0.0049	10444
105.00	1900 MHz RRH	11	16.781	1.4695	0.0042	7695
100.00	EEI Band-On 12' Low Profile Platform w/12 pipe	11	15.249	1.4321	0.0040	6136
90.00	EEI Band-On 12' Low Profile Platform w/12 pipe	11	12.338	1.3254	0.0036	4827
80.00	EEI Band-On 12' Low Profile Platform w/12 pipe	11	9.677	1.1840	0.0031	4045
70.00	EEI Band-On 12' Low Profile Platform w/12 pipe	11	7.313	1.0212	0.0026	3481

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	124 - 95.04	65.939	4	4.4711	0.0207
L2	98.9567 - 46.6667	43.076	4	4.1041	0.0114
L3	52.3334 - 0	11.570	4	2.0814	0.0049

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
124.00	DB810K	4	65.939	4.4711	0.0207	10284
120.00	EEI Band-On 12' Low Profile Platform w/12 pipe	4	62.192	4.4343	0.0188	10284
110.00	EEI Band-On 12' Low Profile Platform w/12 pipe	4	52.921	4.3198	0.0142	3672
105.00	1900 MHz RRH	4	48.395	4.2378	0.0121	2704

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	EEI Band-On 12' Low Profile Platform w/12 pipe	4	43.980	4.1304	0.0116	2155
90.00	EEI Band-On 12' Low Profile Platform w/12 pipe	4	35.593	3.8233	0.0103	1691
80.00	EEI Band-On 12' Low Profile Platform w/12 pipe	4	27.920	3.4162	0.0089	1413
70.00	EEI Band-On 12' Low Profile Platform w/12 pipe	4	21.102	2.9467	0.0074	1213

Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension lb	Actual Allowable Ratio Bolt Compression lb	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
1.7500	12	2.2500	167702.37	173178.47	57.783	26.079	Plate	1.28
			131210.58	217809.56	45.000	45.000		✓
			1.28	0.80	1.28	0.58		

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P/P _a
L1	124 - 95.04 (1)	TP26.9x18x0.1875	28.96	124.00	164.3	5.531	15.1809	-12804.10	83961.70	0.152
L2	95.04 - 46.6667 (2)	TP41.28x25.3213x0.25	52.29	124.00	106.7	13.128	31.1850	-21204.70	409397.00	0.052
L3	46.6667 - 0 (3)	TP55x39.0505x0.3125	52.33	124.00	76.6	22.743	54.2432	-32856.60	1233630.00	0.027

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x lb-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} /F _{bx}	Actual M _y lb-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} /F _{by}
L1	124 - 95.04 (1)	TP26.9x18x0.1875	132990.83	-16.692	39.000	0.428	0.00	0.000	39.000	0.000
L2	95.04 - 46.6667 (2)	TP41.28x25.3213x0.25	1160016.67	-45.960	38.202	1.203	0.00	0.000	38.202	0.000
L3	46.6667 - 0 (3)	TP55x39.0505x0.3125	2684433.33	-43.914	36.209	1.213	0.00	0.000	36.209	0.000

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Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P}{P_a}$	$\frac{f_{bx}}{F_{bx}}$	$\frac{f_{by}}{F_{by}}$			
L1	124 - 95.04 (1)	TP26.9x18x0.1875	0.152	0.428	0.000	0.581	1.333	H1-3 ✓
L2	95.04 - 46.6667 (2)	TP41.28x25.3213x0.25	0.052	1.203	0.000	1.255	1.333	H1-3 ✓
L3	46.6667 - 0 (3)	TP55x39.0505x0.3125	0.027	1.213	0.000	1.239	1.333	H1-3 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail	
L1	124 - 95.04	Pole	TP26.9x18x0.1875	1	-12804.10	111920.95	43.5	Pass	
L2	95.04 - 46.6667	Pole	TP41.28x25.3213x0.25	2	-21204.70	545726.18	94.1	Pass	
L3	46.6667 - 0	Pole	TP55x39.0505x0.3125	3	-32856.60	1644428.72	93.0	Pass	
							Summary		
							Pole (L2)	94.1	Pass
							Base Plate	96.3	Pass
							RATING =	96.3	Pass



EBI Consulting

environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT54XC749

Cingular - Bethel
38 Spring Hill Road
Bethel, CT 06801

March 5, 2013

March 5, 2013

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

Re: Emissions Values for Site: **CT54XC749 – Cingular - Bethel**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 38 Spring Hill Road, Bethel, 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 97-01 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 is approximately 567 $\mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS band 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 38 Spring Hill Road, Bethel, 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) 5 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 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 **110 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



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 **41.433% (13.811% 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 **83.843%** 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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