ROBINSON & COLE LLP

KENNETH C. BALDWIN

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Also admitted in Massachusetts

December 28, 2012

Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-VER-064-120904 – 223 Brainard Road, Hartford, Connecticut**
EM-VER-049-120904 – Bright Meadow Boulevard, Enfield, Connecticut
EM-VER-089-120813 – 35 Wildwood Street, New Britain, Connecticut
EM-VER-107-120725 – 617 Orange Center Road, Orange, Connecticut
EM-VER-148-120702 – 90 North Plains Industrial Road, Wallingford, Connecticut
EM-VER-003-120906 – 20 Seles Road, Ashford, Connecticut

Completion of Construction Activity

Dear Ms. Roberts:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced Cellco Partnership d/b/a Verizon Wireless telecommunications facilities has been completed.

If you have any questions or need any additional information regarding this facility please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Copy to:
Sandy M. Carter

12012070-v1

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

September 21, 2012

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

RE: **EM-VER-064-120904** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 223 Brainard Road, Hartford, Connecticut.

Dear Attorney Baldwin:

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;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated August 31, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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,

L Roberts

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Pedro E. Segarra, Mayor, City of Hartford
David B. Panagore, Chief Operating Officer, City of Hartford
Christopher B. Fisher, Esq., AT&T

CSC
CONNECTICUT SITING COUNCIL

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

September 6, 2012

The Honorable Pedro E. Segarra
Mayor
City of Hartford
Municipal Building
550 Main Street
Hartford, CT 06103

RE: **EM-VER-064-120904** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 223 Brainard Road, Hartford, Connecticut.

Dear Mayor Segarra:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by September 20, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: David B. Panagore, Chief Operating Officer, City of Hartford

ROBINSON & COLE

EM-VER-064-120904

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Also admitted in Massachusetts

August 31, 2012

Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Antenna Swap**
223 Brainard Road, Hartford, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 88-foot level on an existing 98-foot tower at the above-referenced address. The tower is owned by AT&T. Cellco's use of the tower was approved by the Council in 2008. Cellco now intends to replace all of its antennas with two (2) model LPA-80063-4CF cellular antennas; four (4) model SCCP 2x6015 cellular antennas; one (1) model BXA-171063-8BF PCS antenna; two (2) model BXA-171063-12BF PCS antennas; one (1) model BXA-70063-4CF LTE antenna; and two (2) model SLCP 2x6015 LTE antennas, all at the same 88-foot level. Cellco also intends to install six (6) additional coax cables inside the monopole. Attached behind Tab 1 are the specifications for Cellco's replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Pedro E. Segarra, Mayor of the City of Hartford. A copy of this letter is also being sent to The Metropolitan District, the owner of the property on which the tower is located.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas will be located at the 88-foot level on the existing 98-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundaries.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative power density table for Cellco's modified facility is included behind Tab 2.

Also attached is a Structural Analysis Report confirming that the tower can support Cellco's proposed modifications. (See Tab 3).

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Pedro E. Segarra, Hartford Mayor
The Metropolitan District
Sandy M. Carter

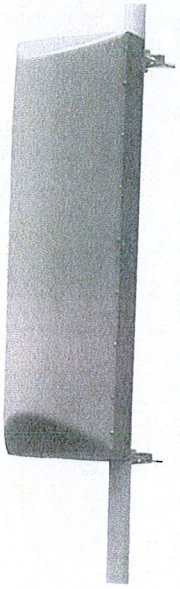
Amphenol ANTENNA SOLUTIONS

LPA-80063-4CF-EDIN-X

V-Pol | Log Periodic | 63° | 13.0 dBd

Replace 'X' with desired electrical downtilt.

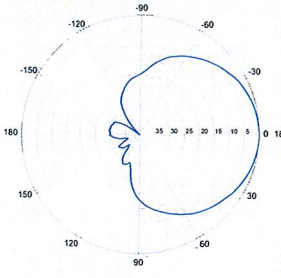
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.



Electrical Characteristics		
Frequency bands	806-960 MHz	
Polarization	Vertical	
Horizontal beamwidth	63°	
Vertical beamwidth	15°	
Gain	13.0 dBd (15.1 dBi)	
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14	
Impedance	50Ω	
VSWR	≤1.4:1	
Upper sidelobe suppression (0°)	-15.7 dB	
Front-to-back ratio (+/-30°)	-31.7 dB	
Null fill	5% (-26.02 dB)	
Input power	500 W	
Lightning protection	Direct Ground	
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1205 x 385 x 332 mm	47.4 x 15.2 x 13.1 in
Depth of antenna with z-bracket	372 mm	14.6 in
Weight without mounting brackets	9.1 kg	20 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.46 m² Side: 0.39 m²	Front: 5.0 ft² Side: 4.2 ft²
Wind load @ 161 km/hr (100 mph)	Front: 660 N Side: 550 N	Front: 149 lbf Side: 124 lbf

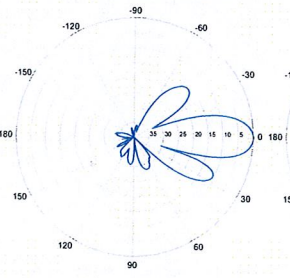
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	21699999	50-102 mm 2.0-4.0 in	5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-80063-4CF-EDIN-X



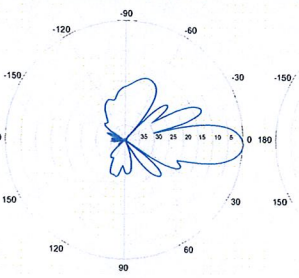
Horizontal

LPA-80063-4CF-EDIN-0



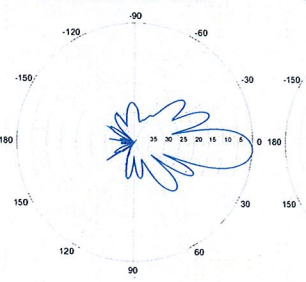
0° | Vertical

LPA-80063-4CF-EDIN-2



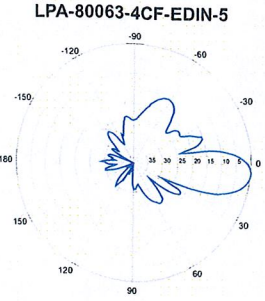
2° | Vertical

LPA-80063-4CF-EDIN-4



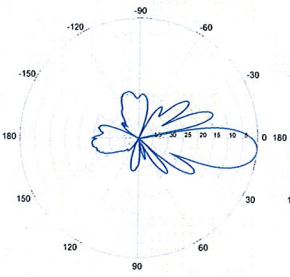
4° | Vertical

LPA-80063-4CF-EDIN-5



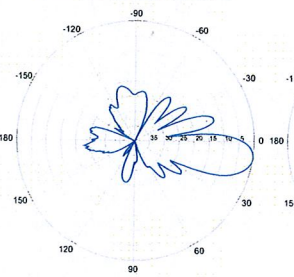
5° | Vertical

LPA-80063-4CF-EDIN-6



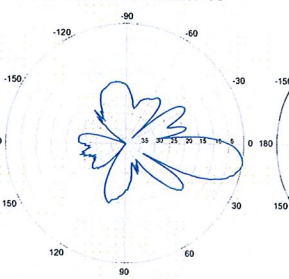
6° | Vertical

LPA-80063-4CF-EDIN-8



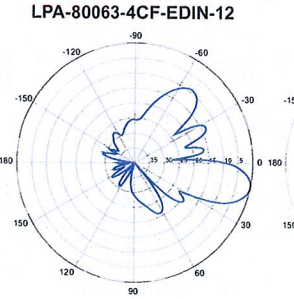
8° | Vertical

LPA-80063-4CF-EDIN-10



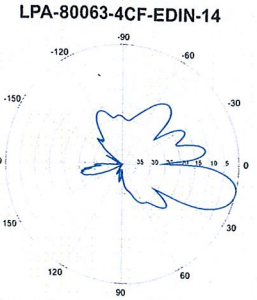
10° | Vertical

LPA-80063-4CF-EDIN-12



12° | Vertical

LPA-80063-4CF-EDIN-14

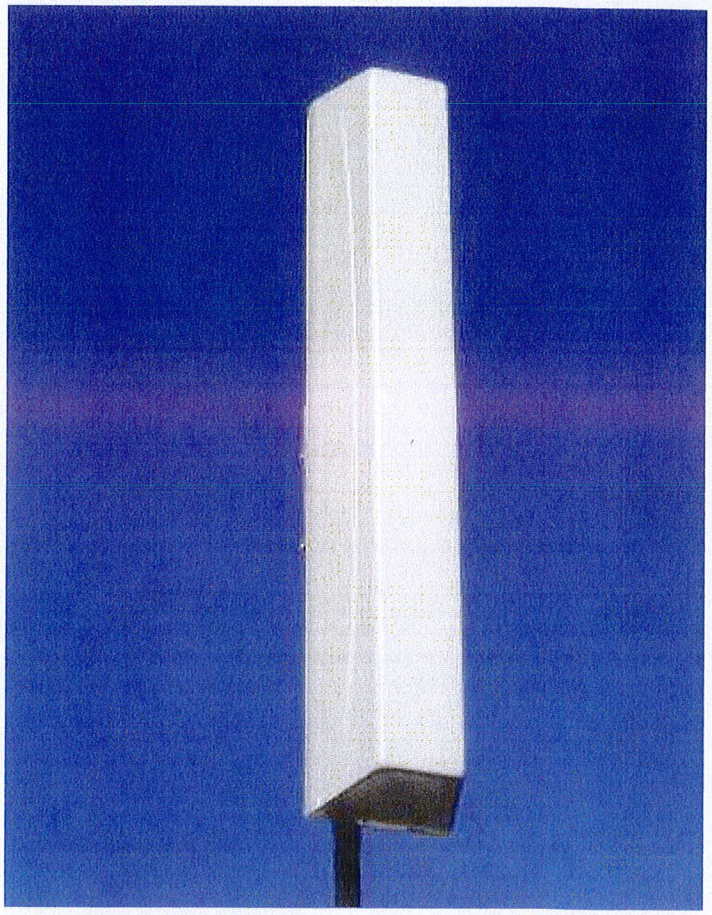


14° | Vertical

Swedcom

SCCP 2x6015

Dual (2x) Circularly Polarized log-periodic antenna



Features

- Transmit Diversity Gain
- Can be configured to combine space & polarization diversity
- Outstanding performance over the entire band (800 - 900 MHz)
- Excellent Axial Ratio
- Optimized for 4G & 3G systems
- Low intermodulation
- Improved Side-to-side rejection
- Fading reduction
- Excellent isolation between ports

Electrical specifications

Frequency range:	**800-900 MHz**
Impedance:	**50 ohm**
Connector type:	**7/16 Din**
Return loss:	**18 dB**
Polarization:	**Circular**
Gain ea. port [Circular]:	**2x15 dBdC**
Gain ea. port [Linear]:	**2x12 dBdL**
Axial Ratio:	**2 dB**
Isolation between ports (TX band):	**30 dB**
Front-to-back ratio:	**30 dB**
Intermodulation (2x20W):	**IM3 150 dB**
	IM5 160 dB
	IM7/9 170 dB
Power rating:	**2x 500 W**
H-plane (-3 dB point):	**2x 55°**
V-plane (-3 dB point):	**2x 11°**
Lightning protection:	**DC grounded**

Mechanical specifications

Overall height:	**66.5 in**	**[1689 mm]**
Width:	**14 in**	**[356 mm]**
Depth:	**10 in**	**[254 mm]**
Weight (excluding brackets):	**30 lbs**	**[13.6 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**6.46 sq. ft.**	**[0.60 sq.m]**
Lateral thrust at 113 mph/ 180 Km/h (worst case):	**330 lbs**	**[1469 N]**

Materials

Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Mounting bolts:	**Stainless steel**

The SCCP 2x6015 is made in the U.S.A.

Amphenol ANTENNA SOLUTIONS

BXA-171063-8BF-EDIN-X

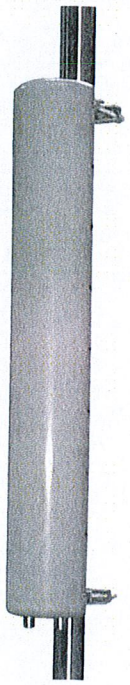
Replace 'X' with desired electrical downtilt.

X-Pol | FET Panel | 63° | 17.4 dBi

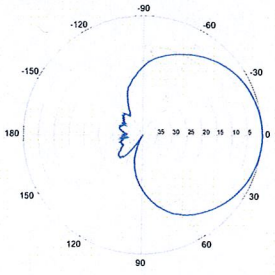
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	7°	7°	7°
Gain	14.5 dBd / 16.6 dBi	14.9 dBd / 17.0 dBi	15.3 dBd / 17.4 dBi
Electrical downtilt (X)	0, 2, 4, 8		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm	5.2 in
Weight without mounting brackets	4.8 kg	10.5 lbs
Survival wind speed	296 km/hr	184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²	Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf

Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-8BF-EDIN-X-FP		

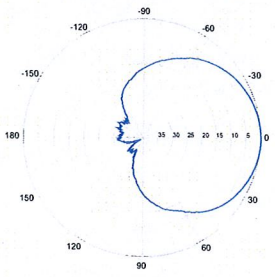


BXA-171063-8BF-EDIN-X



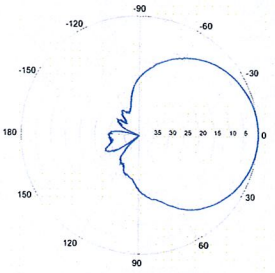
Horizontal | 1710-1880 MHz

BXA-171063-8BF-EDIN-X



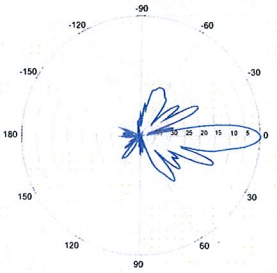
Horizontal | 1850-1990 MHz

BXA-171063-8BF-EDIN-X



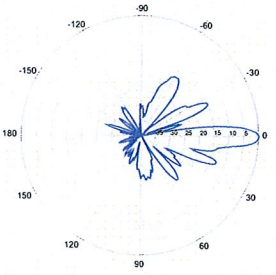
Horizontal | 1920-2170 MHz

BXA-171063-8BF-EDIN-0



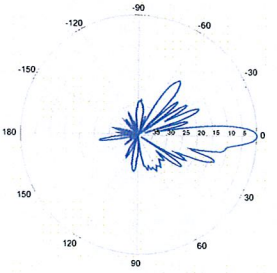
0° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-0



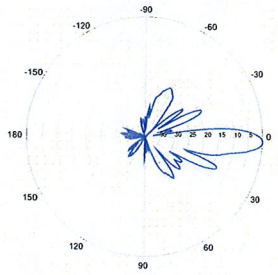
0° | Vertical | 1920-2170 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

BXA-171063-8BF-EDIN-X

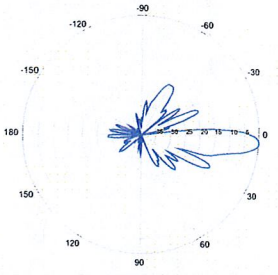
X-Pol | FET Panel | 63° | 17.4 dBi

BXA-171063-8BF-EDIN-2



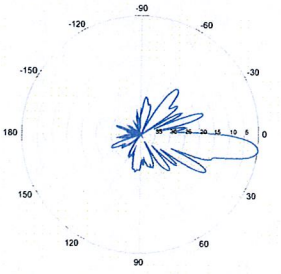
2° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-4



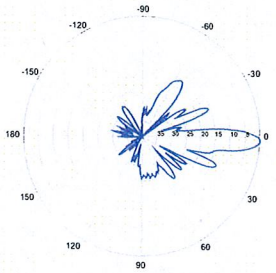
4° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-8



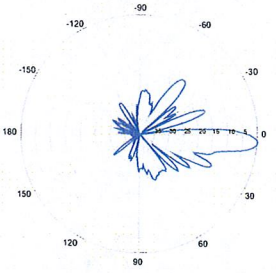
8° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-2



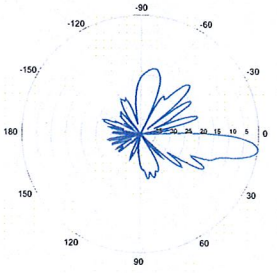
2° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-4



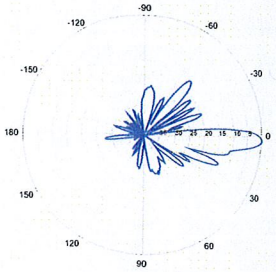
4° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-8



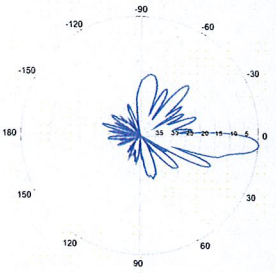
8° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-2



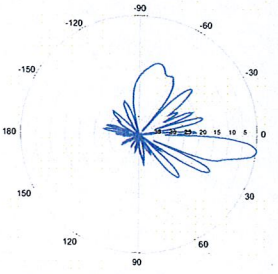
2° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-4



4° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-8



8° | Vertical | 1920-2170 MHz

Amphenol ANTENNA SOLUTIONS

BXA-171063-12BF-EDIN-X

Replace "X" with desired electrical downtilt.

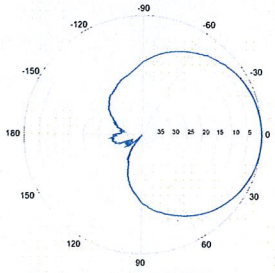
X-Pol | FET Panel | 63° | 19.0 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	4.5°	4.5°	4.5°
Gain	16.1 dBd / 18.2 dBi	16.5 dBd / 18.6 dBi	16.9 dBd / 19.0 dBi
Electrical downtilt (X)	0, 2, 5		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back ratio	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1820 x 154 x 105 mm	71.7 x 6.1 x 4.1 in
Depth with z-brackets	133 mm	5.2 in
Weight without mounting brackets	6.8 kg	15 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.28 m² Side: 0.19 m²	Front: 3.1 ft² Side: 2.1 ft²
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf

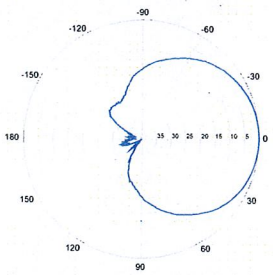
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-12BF-EDIN-X-FP		

BXA-171063-12BF-EDIN-X



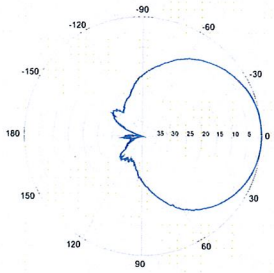
Horizontal | 1710-1880 MHz

BXA-171063-12BF-EDIN-X



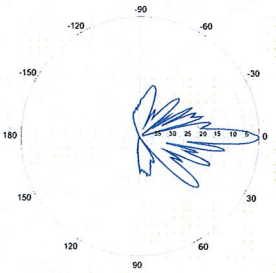
Horizontal | 1850-1990 MHz

BXA-171063-12BF-EDIN-X



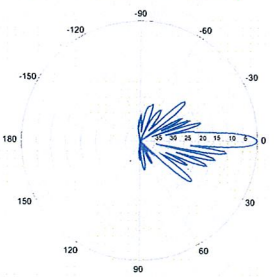
Horizontal | 1920-2170 MHz

BXA-171063-12BF-EDIN-0



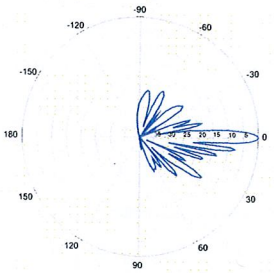
0° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-0

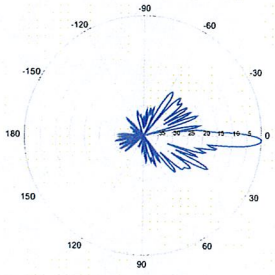


0° | Vertical | 1920-2170 MHz

BXA-171063-12BF-EDIN-X

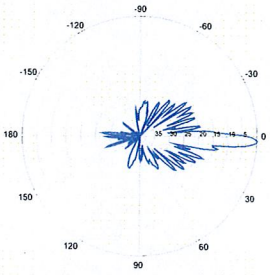
X-Pol | FET Panel | 63° | 19.0 dBi

BXA-171063-12BF-EDIN-2



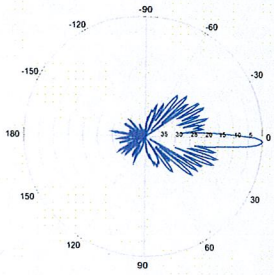
2° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-2



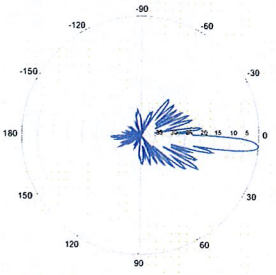
2° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-2



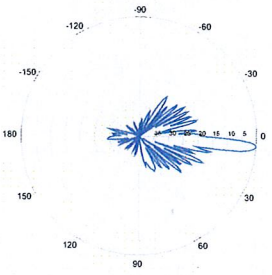
2° | Vertical | 1920-2170 MHz

BXA-171063-12BF-EDIN-5



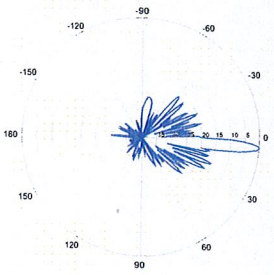
5° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-5



5° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-5



5° | Vertical | 1920-2170 MHz

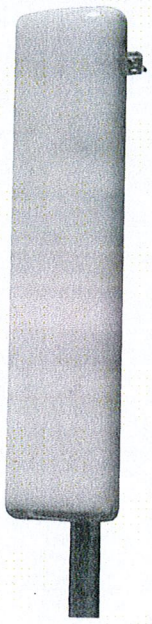
Amphenol ANTENNA SOLUTIONS

BXA-70063-4CF-EDIN-X

X-Pol | FET Panel | 63° | 13.0 dBd

Replace "X" with desired electrical downtilt

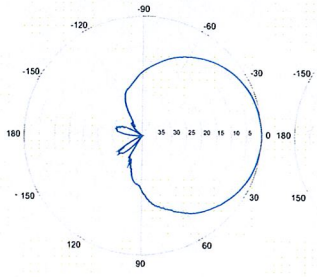
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.



Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	65°	63°
Vertical beamwidth	17°	15°
Gain	12.5 dBd (14.6 dBi)	13.0 dBd (15.1 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 9, 10, 12, 14	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-16.3 dB	-22.1 dB
Front-to-back ratio (+/-30°)	-36.1 dB	-34.9 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -30 dB	
Input power with EDIN connectors	500 W	
Input power with NE connectors	300 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1205 x 285 x 133 mm	47.4 x 11.2 x 5.2 in
Depth with z-brackets	173 mm	6.8 in
Weight without mounting brackets	4.5 kg	9.9 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.34 m² Side: 0.16 m²	Front: 3.7 ft² Side: 1.7 ft²
Wind load @ 161 km/hr (100 mph)	Front: 498 N Side: 260 N	Front: 111 lbf Side: 55 lbf

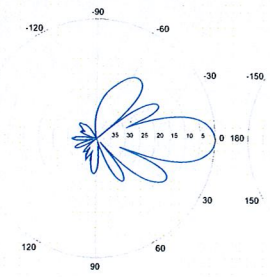
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit	36210006	40-115 mm 1.57-4.5 in	4.1 kg 9 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-4CF-EDIN-X-FP		

BXA-70063-4CF-EDIN-X



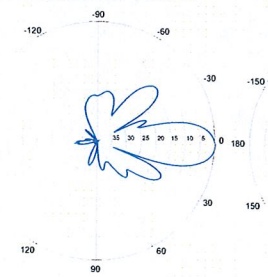
Horizontal | 750 MHz

BXA-70063-4CF-EDIN-0



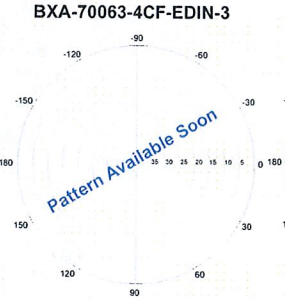
0° | Vertical | 750 MHz

BXA-70063-4CF-EDIN-2



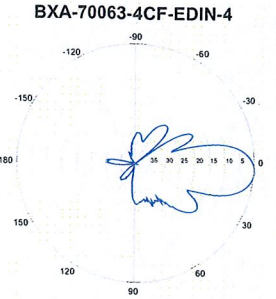
2° | Vertical | 750 MHz

BXA-70063-4CF-EDIN-3

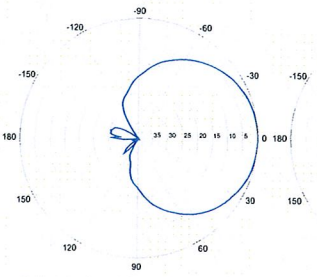


3° | Vertical | 750 MHz

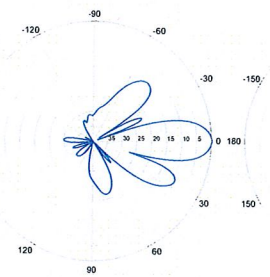
BXA-70063-4CF-EDIN-4



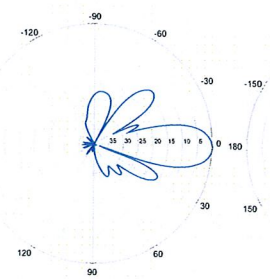
4° | Vertical | 750 MHz



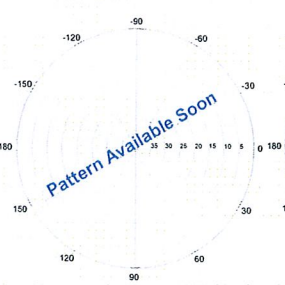
Horizontal | 850 MHz



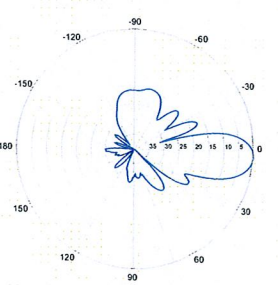
0° | Vertical | 850 MHz



2° | Vertical | 850 MHz



3° | Vertical | 850 MHz

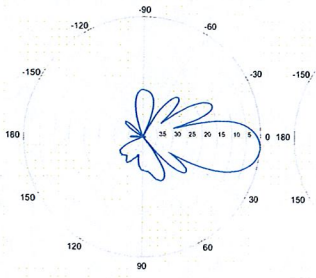


4° | Vertical | 850 MHz

BXA-70063-4CF-EDIN-X

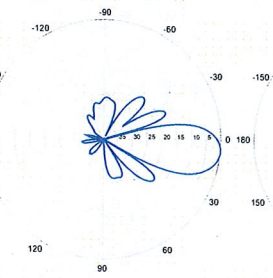
X-Pol | FET Panel | 63° | 13.0 dBd

BXA-70063-4CF-EDIN-5



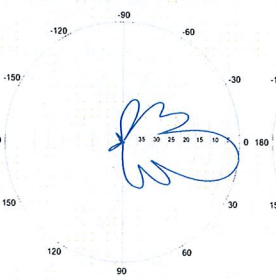
5° | Vertical | 750 MHz

BXA-70063-4CF-EDIN-6



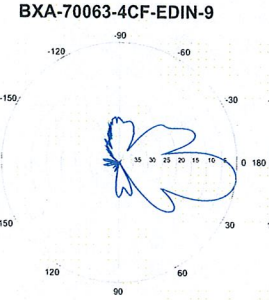
6° | Vertical | 750 MHz

BXA-70063-4CF-EDIN-8



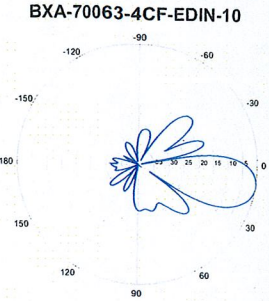
8° | Vertical | 750 MHz

BXA-70063-4CF-EDIN-9

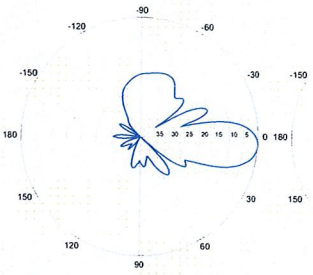


9° | Vertical | 750 MHz

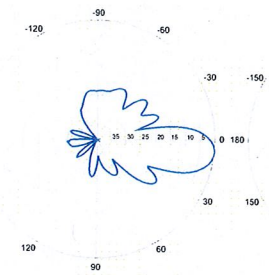
BXA-70063-4CF-EDIN-10



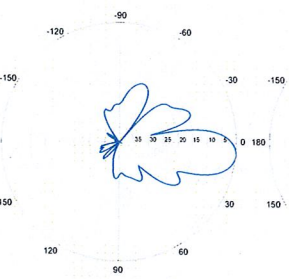
10° | Vertical | 750 MHz



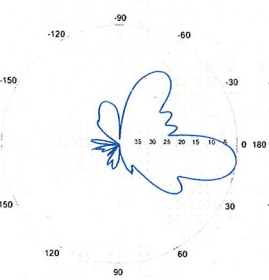
5° | Vertical | 850 MHz



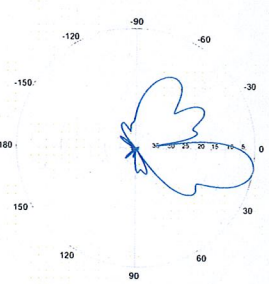
6° | Vertical | 850 MHz



8° | Vertical | 850 MHz

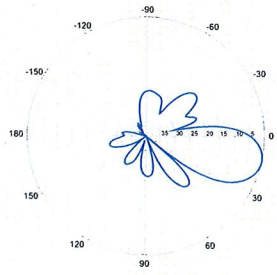


9° | Vertical | 850 MHz



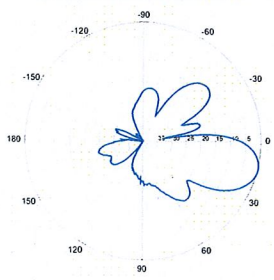
10° | Vertical | 850 MHz

BXA-70063-4CF-EDIN-12

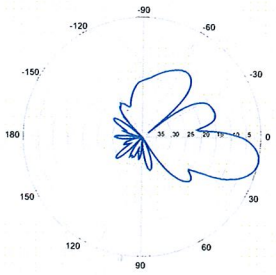


12° | Vertical | 750 MHz

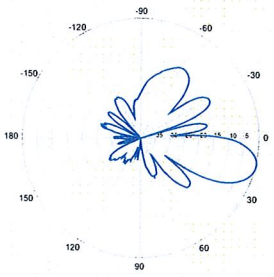
BXA-70063-4CF-EDIN-14



14° | Vertical | 750 MHz



12° | Vertical | 850 MHz

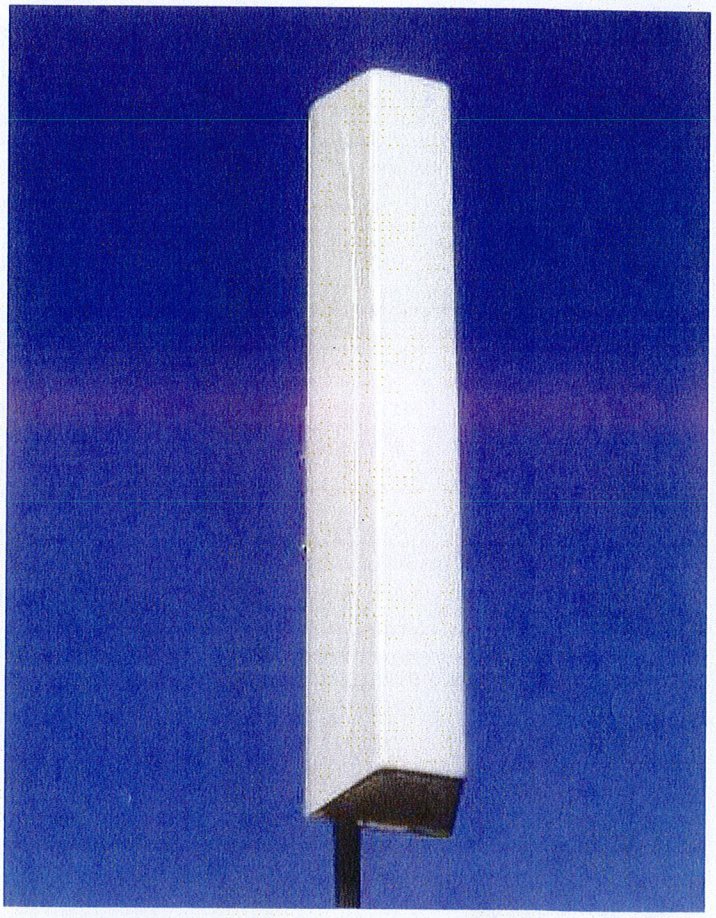


14° | Vertical | 850 MHz

Swedcom

SLCP 2x6015

Dual (2x) Circularly Polarized log-periodic antenna



Features

- Transmit Diversity Gain
- Can be configured to combine space & polarization diversity
- Outstanding performance over the entire band (700 - 800 MHz)
- Excellent Axial Ratio
- Optimized for 4G & 3G systems
- Low intermodulation
- Improved Side-to-side rejection
- Fading reduction
- Excellent isolation between ports

Electrical specifications

Frequency range:	**700-800 MHz**	
Impedance:	**50 ohm**	
Connector type:	**7/16 Din**	
Return loss:	**18 dB**	
Polarization:	**Circular**	
Gain ea. port [Circular]:	**2x15 dBdC**	
Gain ea. port [Linear]:	**2x12 dBdL**	
Axial Ratio:	**2 dB**	
Isolation between ports (TX band):	**30 dB**	
Front-to-back ratio:	**30 dB**	
Intermodulation (2x20W):	**IM3**	**150 dB**
	IM5	**160 dB**
	IM7/9	**170 dB**
Power rating:	**2x 500 W**	
H-plane (-3 dB point):	**2x 55°**	
V-plane (-3 dB point):	**2x 11°**	
Lightning protection:	**DC grounded**	

Mechanical specifications

Overall height:	**77 in**	**[1956 mm]**
Width:	**14 in**	**[356 mm]**
Depth:	**11 in**	**[279 mm]**
Weight (excluding brackets):	**30 lbs**	**[13.6 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**7.49 sq. ft.**	**[0.70 sq.m]**
Lateral thrust at 113 mph/ 180 Km/h (worst case):	**382 lbs**	**[1701 N]**

Materials

Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Mounting bolts:	**Stainless steel**

The SLCP 2x6015 is made in the U.S.A.

	General	Power	Density					
Site Name: Hartford S 4								
Tower Height: Verizon @ 88Ft.								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T GSM	1	283	103	0.0096	880	0.5867	1.63%	
*AT&T GSM	4	525	103	0.0712	1900	1.0000	7.12%	
*AT&T LTE	1	1313	102	0.0454	734	0.4893	9.27%	
*Clearwire	2	153	80	0.0172	2496	1.0000	1.72%	
*Clearwire	1	211	80	0.0119	18 GHz	1.0000	1.19%	
Verizon PCS	**11**	**274**	**88**	**0.1399**	**1970**	**1.0000**	**13.99%**	
Verizon Cellular	**9**	**273**	**88**	**0.1141**	**869**	**0.5793**	**19.69%**	
Verizon AWS	**1**	**666**	**88**	**0.0309**	**2145**	**1.0000**	**3.09%**	
Verizon 700	**1**	**886**	**88**	**0.0411**	**698**	**0.4653**	**8.84%**	
								66.55%
* Source: Siting Council								

AT&T Towers
5405 Windward Parkway
Alpharetta, GA 30004
770-708-6100

Black & Veatch Corp.
10950 Grandview Dr. Building 34
Overland Park, KS 66210

Tuesday, June 12, 2012

STRUCTURAL ANALYSIS
98' Monopole

AT&T DESIGNATION:	Site ID:	4539
	Site FA:	10071011
	Site Name:	East Hartford Hochanum
	Project Number:	176850 (4539VERCT-S)
ANALYSIS CRITERIA:	Codes:	TIA/EIA-222-F
SITE DATA:	223 Brainard Road, Hartford, CT 06114, Hartford County Latitude 41.732792, Longitude -72.661899 Market: MA/RI/VT/NH/ME/CT 98' Monopole	

Black & Veatch Corp. is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	83.50%	Pass
Foundation Ratio with Proposed Equipment:	N/A	N/A

We at Black & Veatch Corp. appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by:	Black & Veatch Corp.
Analysis Prepared by:	Charles Carrillo
Analysis Reviewed by:	Chris A. Krafft, P.E.

This analysis was prepared by me or under my direct supervision and to the best of my knowledge and ability complies with the applicable provisions of the governing codes and ordinances.

Black & Veatch Corp.
10950 Grandview Dr. Building 34
Overland Park, KS 66210
B&V: 176850 (4539VERCT-S)

Documents

Document	Description	Source
Structural Analysis by B&T Engineering, Inc., dated 05/29/2012	Previous Structural Analysis	AT&T Siterra
Tower Mapping by STG Communications, dated 08/15/2008	Tower Geometry Data	AT&T Siterra
Site Photos	Site Condition Data	AT&T Siterra
Carrier Co-Location Documents (Applications, Leases, Initial Co-Location Analyses, Modification Request for Information Form, etc.)	Tower Loading Data	AT&T Siterra

Black & Veatch Corp.
10950 Grandview Dr. Building 34
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Assumptions, Disclaimers, and Notes

1. This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. If this information is not current and correct, this report should be considered obsolete and further analysis will be required.
2. This analysis assumes that the tower structural components and mounts, including all steel sections and attachment hardware, are in good working order and in their original state, free of rust or other forms of corrosion. Furthermore, it is assumed that the tower and the tower foundation have been properly maintained and monitored since the time of construction. This report should be considered obsolete and further analysis will be required if the tower and/or foundation does not meet all of the above specifications.
3. This analysis assumes that all existing and/or proposed equipment mounts on the tower will have adequate capacity to support the existing and proposed equipment loading.
4. Capacity of the structural members is based on theoretical values as shown in the attached TAS form.
5. This analysis assumes that all existing and proposed port cuts are properly installed such that the overall structural capacity of the monopole is not reduced.
6. It should be noted that what is called out as the base plate stress ratio in this analysis is representative of not only the base plate, but also the anchor bolts, grout, and base plate stiffeners. The ratio reported is the controlling ratio when comparing these tower base components.

Tower Analysis Summary Form

General Info

Site Name	East Hartford Hochanum
Site Number	4539VERCT-S
FA Number	10071011
Date of Analysis	6/12/2012
Company Performing Analysis	Black & Veatch Corp.

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	NA
Tower Height (top of steel AGL)	98 ft	NA
Tower Manufacturer	N/A	NA
Tower Model	N/A	NA
Tower Design	N/A	NA
Foundation Design	N/A	NA
Geotech Report	N/A	NA
Tower Mapping	STG Communications	8/15/2008
Previous Structural Analysis	B&T Engineering, Inc.	5/29/2012
Foundation Mapping	N/A	NA

Steel Yield Strength (ksi)

Pole	60
Base Plate	50
Anchor Rods	75

Design Parameters

Design Code Used	TIA/EIA-222-F
Location of Tower (County, State)	Hartford County, CT
Basic Wind Speed (mph)	80
Ice Thickness (in)	0.5
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	83.50%
Base Plate (%)	77.90%
Foundation (%)	N/A
Foundation Adequate?	N/A

Analysis Results (% Maximum Usage)

Existing/Reserved	
Tower (%)	
Base Plate (%)	
Foundation (%)	
Foundation Adequate?	

Analysis Results (% Maximum Usage)

Existing/Reserved + Proposed Condition	
Tower (%)	
Base Plate (%)	
Foundation (%)	
Foundation Adequate?	

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
AT&T	98	101	6	Panel	Powerwave	7770.00	0, 120, 240	1		Low Profile Platform	3		1/2"	Inside
AT&T	98	101	3	Panel	KMW	AM-X-CD-16-65-00T	0, 120, 240				12		1 1/4"	Inside
AT&T	98	101	12	TMA	Powerwave	LGP 21401					1	RET cable	3/8"	Inside
AT&T	98	101	6	RRU	Ericsson	RBS 6601								
AT&T	98	101	1	Box	Raycap	DC6-48-60-18-8F								
Verizon	86	88	6*	Panel	Antel	LPA-80063/4CF	0, 90, 270	1		Low Profile Platform	12		1 5/8"	Inside
Verizon	86	88	6*	Panel	Antel	LPA-185063/8CF	0, 90, 270							
Clear Wireless	79	80	3	Panel	Argus	LLPX310R	30, 150, 270	3		Mid-Mount	6		5/16"	Inside
Clear Wireless	79	80	3	RRH	Samsung	FDD-R6-RRH					2		1/2"	Inside
Clear Wireless	79	80	2	MW	Andrew	VHLP2-23	0, 193				2	Conduit	2"	Inside
Clear Wireless	79	80	2	Radio	Dragonwave	Horizon ODU								
Clear Wireless	79	80	1	Box	Unknown	18"x17"x11"								

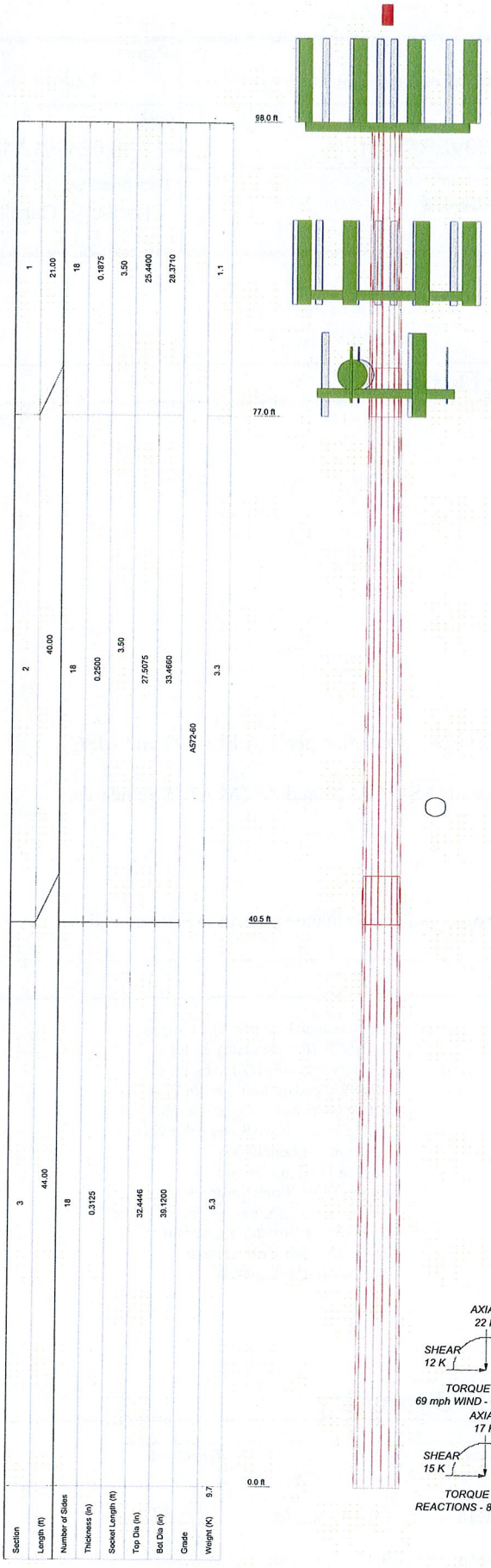
* Four (4) LPA-80063/4CF panel antennas and six (6) LPA-185063/8CF panel antennas to be removed.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
Verizon	86	88	1	Panel	Antel	BXA-70063/4CF	0				6		1 5/8"	Inside
Verizon	86	88	1	Panel	Antel	BXA-171063/8BF	0							
Verizon	86	88	2	Panel	Antel	BXA-171063-12BF	90, 270							
Verizon	86	88	2	Panel	Swedcom	SLCP-2X6015	90, 270							
Verizon	86	88	4	Panel	Swedcom	SCCP 2X6015	90, 270							

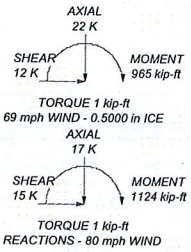
Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
AT&T	98	101	3	Panel		AM-X-CD-16-65-00T					6		1 5/8"	Inside



Section	1	2	3
Length (ft)	21.00	40.00	44.00
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2500	0.3125
Socket Length (ft)	3.50	3.50	
Top Dia (in)	25.4400	27.5075	32.4446
Bot Dia (in)	28.3710	33.4660	39.1200
Grade			
Weight (K)	1.1	3.3	5.3

9.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Beacon side markers (Existing)	105	BXA-171063-8BF w/mount pipe (Verizon / P)	86
PiROD 13' Low Profile Platform (Monopole) (ATI / E)	98	SCCP-2X6015 w/mount pipe (Verizon / P)	86
Powerwave 7770 w/ Mount Pipe (ATI / E)	98	SCCP-2X6015 w/mount pipe (Verizon / P)	86
Powerwave 7770 w/ Mount Pipe (ATI / E)	98	BXA-171063-12BF w/mount pipe (Verizon / P)	86
Powerwave 7770 w/ Mount Pipe (ATI / E)	98	SLCP-2X6015 w/mount pipe (Verizon / P)	86
Powerwave 7770 w/ Mount Pipe (ATI / E)	98	SCCP-2X6015 w/mount pipe (Verizon / P)	86
Powerwave 7770 w/ Mount Pipe (ATI / E)	98	SCCP-2X6015 w/mount pipe (Verizon / P)	86
Powerwave 7770 w/ Mount Pipe (ATI / E)	98	BXA-171063-12BF w/mount pipe (Verizon / P)	86
KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI / E)	98	SLCP-2X6015 w/mount pipe (Verizon / P)	86
KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI / E)	98	VHLP2-23 (Clear Wireless)	80
KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI / Future)	98	VHLP2-23 (Clear Wireless)	80
KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI / Future)	98	2' Standoff T-Arm (5' face width) (Clear Wireless / E)	79
KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI / Future)	98	LLPX310R w/ Mount Pipe (Clear Wireless / E)	79
KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI / Future)	98	LLPX310R w/ Mount Pipe (Clear Wireless / E)	79
(4) LGP21401 (ATI / E)	98	LLPX310R w/ Mount Pipe (Clear Wireless / E)	79
(4) LGP21401 (ATI / E)	98	4' x 2" mount pipe (Clear Wireless / E)	79
(4) LGP21401 (ATI / E)	98	4' x 2" mount pipe (Clear Wireless / E)	79
(2) Ericsson RBS 6601 (ATI / E)	98	4' x 2" mount pipe (Clear Wireless / E)	79
(2) Ericsson RBS 6601 (ATI / E)	98	BTS - Samsung FDD-R6-RRH (Clear Wireless / E)	79
(2) Ericsson RBS 6601 (ATI / E)	98	BTS - Samsung FDD-R6-RRH (Clear Wireless / E)	79
Demarcation Box (DC6-48-60-18-8F) (ATI / E)	98	BTS - Samsung FDD-R6-RRH (Clear Wireless / E)	79
PiROD 13' Low Profile Platform (Monopole) (Verizon / E)	86	Horizon Compact ODU (Clear Wireless / E)	79
LPA-80063/4CF w/mount pipe (Verizon / E)	86	Horizon Compact ODU (Clear Wireless / E)	79
LPA-80063/4CF w/mount pipe (Verizon / E)	86	Junction Box (18"x17"x11") (Clear Wireless / E)	79
BXA-70063-4CF w/ Mount Pipe (Verizon / P)	86	2' Standoff T-Arm (5' face width) (Clear Wireless / E)	79
		2' Standoff T-Arm (5' face width) (Clear Wireless / E)	79

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. Weld together tower sections have flange connections.
6. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
7. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
8. Welds are fabricated with ER-70S-6 electrodes.
9. TOWER RATING: 83.5%

BLACK & VEATCH
Building a world of difference.
Black & Veatch Corp.
10950 Grandview Drive
Overland Park, KS 66210
Phone: (913) 458-2000
FAX: (913) 458-8136

Job: 4539 East Hartford Hochanum			
Project: 176850 (4539VERCT-S)			
Client: AT&T Towers	Drawn by: Charles E. Carrillo, E.I.T.	App'd:	
Code: TIA/EIA-222-F	Date: 06/12/12	Scale: NTS	
Path:		Dwg No. E-1	

tnxTower	Job	Page
	4539 East Hartford Hochanum	1 of 9
Black & Veatch Corp. 10950 Grandview Drive Overland Park, KS 66210 Phone: (913) 458-2000 FAX: (913) 458-8136	**Project** 176850 (4539VERCT-S)	**Date** 12:38:52 06/12/12
	Client AT&T Towers	**Designed by** Charles E. Carrillo, E.I.T.

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 Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
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

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	√ Include Shear-Torsion Interaction
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	98.00-77.00	21.00	3.50	18	25.4400	28.3710	0.1875	0.7500	A572-60 (60 ksi)
L2	77.00-40.50	40.00	3.50	18	27.5075	33.4660	0.2500	1.0000	A572-60 (60 ksi)
L3	40.50-0.00	44.00		18	32.4446	39.1200	0.3125	1.2500	A572-60

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade (60 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	25.8325	15.0284	1210.7620	8.9646	12.9235	93.6867	2423.1172	7.5156	4.1474	22.12
	28.8087	16.7727	1683.1795	10.0051	14.4125	116.7863	3368.5737	8.3879	4.6633	24.871
L2	28.4613	21.6288	2030.2169	9.6764	13.9738	145.2873	4063.1053	10.8165	4.4013	17.605
	33.9823	26.3569	3673.8919	11.7917	17.0007	216.1020	7352.6181	13.1810	5.4500	21.8
L3	33.4843	31.8711	4157.3155	11.4069	16.4819	252.2356	8320.1012	15.9386	5.1603	16.513
	39.7235	38.4922	7323.8829	13.7767	19.8730	368.5351	14657.4028	19.2498	6.3351	20.272

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 98.00-77.00				1	1	1		
L2 77.00-40.50				1	1	1		
L3 40.50-0.00				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	8
Embedment length	58.5000 in
f'_c	3 ksi
Grout space	3.0000 in
Base plate grade	A633-50
Base plate thickness	2.7500 in
Bolt circle diameter	45.0000 in
Outer diameter	44.0000 in
Inner diameter	39.1200 in
Corner clipped	6.8940 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Safety Line 3/8 (Existing)	B	No	CaAa (Out Of Face)	98.00 - 0.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
LDF4P-50A (1/2 FOAM)	C	No	Inside Pole	98.00 - 8.00	3	No Ice	0.00	0.15

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
(AT&T / E)						1/2" Ice	0.00	0.15
LDF6-50A (1-1/4 FOAM)	C	No	Inside Pole	98.00 - 8.00	12	No Ice	0.00	0.66
(AT&T / E)						1/2" Ice	0.00	0.66
RET cable	C	No	Inside Pole	98.00 - 8.00	1	No Ice	0.00	0.08
(AT&T / E)						1/2" Ice	0.00	0.08
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	86.00 - 8.00	12	No Ice	0.00	0.82
(Verizon / E)						1/2" Ice	0.00	0.82
RG-11 (5/16 FOAM POLYE.)	B	No	Inside Pole	79.00 - 8.00	6	No Ice	0.00	0.09
(Clear Wireless / E)						1/2" Ice	0.00	0.09
LDF4RN-50A (1/2 FOAM)	B	No	Inside Pole	79.00 - 8.00	2	No Ice	0.00	0.15
(Clear Wireless / E)						1/2" Ice	0.00	0.15
2" innerduct conduit	B	No	Inside Pole	79.00 - 8.00	2	No Ice	0.00	0.20
(Clear Wireless / E)						1/2" Ice	0.00	0.20
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	86.00 - 8.00	6	No Ice	0.00	0.82
(Verizon / P)						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	98.00 - 8.00	6	No Ice	0.00	0.82
(AT&T / F)						1/2" Ice	0.00	0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	98.00-77.00	A	0.000	0.000	0.000	0.000	0.13
		B	0.000	0.000	0.000	0.787	0.01
		C	0.000	0.000	0.000	0.000	0.28
L2	77.00-40.50	A	0.000	0.000	0.000	0.000	0.54
		B	0.000	0.000	0.000	1.369	0.05
		C	0.000	0.000	0.000	0.000	0.49
L3	40.50-0.00	A	0.000	0.000	0.000	0.000	0.48
		B	0.000	0.000	0.000	1.519	0.05
		C	0.000	0.000	0.000	0.000	0.43

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_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	98.00-77.00	A	0.500	0.000	0.000	0.000	0.000	0.13
		B		0.000	0.000	0.000	2.887	0.02
		C		0.000	0.000	0.000	0.000	0.28
L2	77.00-40.50	A	0.500	0.000	0.000	0.000	0.000	0.54
		B		0.000	0.000	0.000	5.019	0.07
		C		0.000	0.000	0.000	0.000	0.49
L3	40.50-0.00	A	0.500	0.000	0.000	0.000	0.000	0.48
		B		0.000	0.000	0.000	5.569	0.07
		C		0.000	0.000	0.000	0.000	0.43

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	98.00-77.00	0.0479	0.0277	0.1626	0.0939
L2	77.00-40.50	0.0480	0.0277	0.1644	0.0949
L3	40.50-0.00	0.0481	0.0278	0.1664	0.0961

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft / ft / ft	°	ft		ft^2	ft^2	K
Beacon side markers (Existing)	C	None		0.0000	105.00	No Ice	0.93	0.93	0.02
						1/2" Ice	1.07	1.07	0.03
PiROD 13' Low Profile Platform (Monopole) (AT&T / E)	C	None		0.0000	98.00	No Ice	15.70	15.70	1.30
						1/2" Ice	20.10	20.10	1.76
Powerwave 7770 w/ Mount Pipe (AT&T / E)	A	From Face	3.00 6.00 3.00	0.0000	98.00	No Ice	6.50	4.58	0.06
						1/2" Ice	7.19	5.66	0.10
Powerwave 7770 w/ Mount Pipe (AT&T / E)	B	From Face	3.00 6.00 3.00	0.0000	98.00	No Ice	6.50	4.58	0.06
						1/2" Ice	7.19	5.66	0.10
Powerwave 7770 w/ Mount Pipe (AT&T / E)	C	From Face	3.00 6.00 3.00	0.0000	98.00	No Ice	6.50	4.58	0.06
						1/2" Ice	7.19	5.66	0.10
Powerwave 7770 w/ Mount Pipe (AT&T / E)	A	From Face	3.00 -6.00 3.00	0.0000	98.00	No Ice	6.50	4.58	0.06
						1/2" Ice	7.19	5.66	0.10
Powerwave 7770 w/ Mount Pipe (AT&T / E)	B	From Face	3.00 -6.00 3.00	0.0000	98.00	No Ice	6.50	4.58	0.06
						1/2" Ice	7.19	5.66	0.10
Powerwave 7770 w/ Mount Pipe (AT&T / E)	C	From Face	3.00 -6.00 3.00	0.0000	98.00	No Ice	6.50	4.58	0.06
						1/2" Ice	7.19	5.66	0.10
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T / E)	A	From Face	3.00 2.00 3.00	0.0000	98.00	No Ice	6.73	5.32	0.05
						1/2" Ice	7.20	6.03	0.10
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T / E)	B	From Face	3.00 2.00 3.00	0.0000	98.00	No Ice	6.73	5.32	0.05
						1/2" Ice	7.20	6.03	0.10
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T / E)	C	From Face	3.00 2.00 3.00	0.0000	98.00	No Ice	6.73	5.32	0.05
						1/2" Ice	7.20	6.03	0.10
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T / Future)	A	From Face	3.00 -2.00 3.00	0.0000	98.00	No Ice	6.73	5.32	0.05
						1/2" Ice	7.20	6.03	0.10
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T / Future)	B	From Face	3.00 -2.00 3.00	0.0000	98.00	No Ice	6.73	5.32	0.05
						1/2" Ice	7.20	6.03	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T / Future)	C	From Face	3.00 -2.00 3.00	0.0000	98.00	No Ice 1/2" Ice	6.73 7.20	5.32 6.03	0.05 0.10
(4) LGP21401 (AT&T / E)	A	From Face	3.00 0.00 3.00	0.0000	98.00	No Ice 1/2" Ice	1.23 1.38	0.26 0.34	0.01 0.02
(4) LGP21401 (AT&T / E)	B	From Face	3.00 0.00 3.00	0.0000	98.00	No Ice 1/2" Ice	1.23 1.38	0.26 0.34	0.01 0.02
(4) LGP21401 (AT&T / E)	C	From Face	3.00 0.00 3.00	0.0000	98.00	No Ice 1/2" Ice	1.23 1.38	0.26 0.34	0.01 0.02
(2) Ericsson RBS 6601 (AT&T / E)	A	From Face	3.00 0.00 3.00	0.0000	98.00	No Ice 1/2" Ice	0.48 0.63	0.35 0.46	0.02 0.03
(2) Ericsson RBS 6601 (AT&T / E)	B	From Face	3.00 0.00 3.00	0.0000	98.00	No Ice 1/2" Ice	0.48 0.63	0.35 0.46	0.02 0.03
(2) Ericsson RBS 6601 (AT&T / E)	C	From Face	3.00 0.00 3.00	0.0000	98.00	No Ice 1/2" Ice	0.48 0.63	0.35 0.46	0.02 0.03
Demarcation Box (DC6-48-60-18-8F) (AT&T / E)	A	From Face	1.00 0.00 3.00	0.0000	98.00	No Ice 1/2" Ice	1.47 1.67	1.47 1.67	0.03 0.05
PiROD 13' Low Profile Platform (Monopole) (Verizon / E)	C	None		0.0000	86.00	No Ice 1/2" Ice	15.70 20.10	15.70 20.10	1.30 1.76
LPA-80063/4CF w/mount pipe (Verizon / E)	A	From Face	3.00 6.00 2.00	0.0000	86.00	No Ice 1/2" Ice	7.49 8.07	7.51 8.41	0.04 0.11
LPA-80063/4CF w/mount pipe (Verizon / E)	A	From Face	3.00 -6.00 2.00	0.0000	86.00	No Ice 1/2" Ice	7.49 8.07	7.51 8.41	0.04 0.11
BXA-70063-4CF w/ Mount Pipe (Verizon / P)	A	From Face	3.00 -2.67 2.00	0.0000	86.00	No Ice 1/2" Ice	5.89 6.59	4.10 5.13	0.04 0.08
BXA-171063-8BF w/mount pipe (Verizon / P)	A	From Face	3.00 2.67 2.00	0.0000	86.00	No Ice 1/2" Ice	3.38 3.86	3.55 4.35	0.04 0.07
SCCP-2X6015 w/mount pipe (Verizon / P)	B	From Face	3.00 6.00 2.00	-30.0000	86.00	No Ice 1/2" Ice	9.20 9.78	7.93 8.97	0.05 0.13
SCCP-2X6015 w/mount pipe (Verizon / P)	B	From Face	3.00 -6.00 2.00	-30.0000	86.00	No Ice 1/2" Ice	9.20 9.78	7.93 8.97	0.05 0.13
BXA-171063-12BF w/mount pipe (Verizon / P)	B	From Face	3.00 2.67 2.00	-30.0000	86.00	No Ice 1/2" Ice	4.90 5.41	5.16 6.24	0.04 0.08
SLCP-2X6015 w/mount pipe (Verizon / P)	B	From Face	3.00 -2.67 2.00	-30.0000	86.00	No Ice 1/2" Ice	10.62 11.27	9.90 11.20	0.06 0.14
SCCP-2X6015 w/mount pipe (Verizon / P)	C	From Face	3.00 6.00 2.00	-30.0000	86.00	No Ice 1/2" Ice	9.20 9.78	7.93 8.97	0.05 0.13
SCCP-2X6015 w/mount pipe (Verizon / P)	C	From Face	3.00 -6.00 2.00	-30.0000	86.00	No Ice 1/2" Ice	9.20 9.78	7.93 8.97	0.05 0.13

tnxTower	Job: 4539 East Hartford Hochanum	Page: 6 of 9
Black & Veatch Corp. 10950 Grandview Drive Overland Park, KS 66210 Phone: (913) 458-2000 FAX: (913) 458-8136	Project: 176850 (4539VERCT-S)	Date: 12:38:52 06/12/12
	Client: AT&T Towers	Designed by: Charles E. Carrillo, E.I.T.

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BXA-171063-12BF w/mount pipe	C	From Face	3.00 2.67 2.00	-30.0000	86.00	No Ice 1/2" Ice	4.90 5.41	5.16 6.24	0.04 0.08
(Verizon / P)									
SLCP-2X6015 w/mount pipe	C	From Face	3.00 -2.67 2.00	-30.0000	86.00	No Ice 1/2" Ice	10.62 11.27	9.90 11.20	0.06 0.14
(Verizon / P)									
2' Standoff T-Arm (5' face width)	A	From Face	0.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	3.50 4.20	3.50 4.20	0.09 0.12
(Clear Wireless / E)									
2' Standoff T-Arm (5' face width)	B	From Face	0.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	3.50 4.20	3.50 4.20	0.09 0.12
(Clear Wireless / E)									
2' Standoff T-Arm (5' face width)	C	From Face	0.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	3.50 4.20	3.50 4.20	0.09 0.12
(Clear Wireless / E)									
LLPX310R w/ Mount Pipe	A	From Face	2.50 -2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	5.73 6.45	3.77 4.77	0.05 0.10
(Clear Wireless / E)									
LLPX310R w/ Mount Pipe	B	From Face	2.50 -2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	5.73 6.45	3.77 4.77	0.05 0.10
(Clear Wireless / E)									
LLPX310R w/ Mount Pipe	C	From Face	2.50 -2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	5.73 6.45	3.77 4.77	0.05 0.10
(Clear Wireless / E)									
4' x 2" mount pipe	A	From Face	2.50 2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	0.79 1.03	0.79 1.03	0.01 0.02
(Clear Wireless / E)									
4' x 2" mount pipe	B	From Face	2.50 2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	0.79 1.03	0.79 1.03	0.01 0.02
(Clear Wireless / E)									
4' x 2" mount pipe	C	From Face	2.50 2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	0.79 1.03	0.79 1.03	0.01 0.02
(Clear Wireless / E)									
BTS - Samsung FDD-R6-RRH	A	From Face	2.50 -2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	1.87 2.05	0.78 0.92	0.03 0.04
(Clear Wireless / E)									
BTS - Samsung FDD-R6-RRH	B	From Face	2.50 -2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	1.87 2.05	0.78 0.92	0.03 0.04
(Clear Wireless / E)									
BTS - Samsung FDD-R6-RRH	C	From Face	2.50 -2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	1.87 2.05	0.78 0.92	0.03 0.04
(Clear Wireless / E)									
Horizon Compact ODU	A	From Face	2.50 2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	0.84 0.97	0.43 0.52	0.01 0.02
(Clear Wireless / E)									
Horizon Compact ODU	C	From Face	2.50 2.50 1.00	30.0000	79.00	No Ice 1/2" Ice	0.84 0.97	0.43 0.52	0.01 0.02
(Clear Wireless / E)									
Junction Box (18"x17"x11")	B	From Face	2.50 0.00 1.00	30.0000	79.00	No Ice 1/2" Ice	2.98 3.21	1.93 2.12	0.03 0.05
(Clear Wireless / E)									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert (ft)	Azimuth Adjustment (°)	3 dB Beam Width (°)	Elevation (ft)	Outside Diameter (ft)		Aperture Area (ft^2)	Weight (K)
VHLP2-23 (Clear Wireless)	A	Paraboloid w/Shroud (HP)	From Face	2.50 2.50 0.00	0.0000		80.00	2.17	No Ice 1/2" Ice	3.70 3.99	0.04 0.06
VHLP2-23 (Clear Wireless)	C	Paraboloid w/Shroud (HP)	From Face	2.50 2.50 0.00	-47.0000		80.00	2.17	No Ice 1/2" Ice	3.70 3.99	0.04 0.06

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 77	21.314	38	1.7196	0.0040
L2	80.5 - 40.5	15.144	38	1.6194	0.0033
L3	44 - 0	4.800	38	0.9817	0.0012

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.00	Beacon side markers	38	21.314	1.7196	0.0046	23537
98.00	PiROD 13' Low Profile Platform (Monopole)	38	21.314	1.7196	0.0046	23537
86.00	PiROD 13' Low Profile Platform (Monopole)	38	17.050	1.6628	0.0042	9807
80.00	VHLP2-23	38	14.973	1.6146	0.0039	6478
79.00	2' Standoff T-Arm (5' face width)	38	14.633	1.6045	0.0039	6107

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 77	37.855	13	3.0549	0.0071
L2	80.5 - 40.5	26.899	13	2.8769	0.0059
L3	44 - 0	8.529	13	1.7443	0.0022

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.00	Beacon side markers	13	37.855	3.0549	0.0082	13311
98.00	PiROD 13' Low Profile Platform (Monopole)	13	37.855	3.0549	0.0082	13311
86.00	PiROD 13' Low Profile Platform (Monopole)	13	30.284	2.9539	0.0074	5545
80.00	VHLP2-23	13	26.596	2.8684	0.0070	3662
79.00	2' Standoff T-Arm (5' face width)	13	25.992	2.8504	0.0069	3453

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	98 - 77	Pole	TP28.371x25.44x0.1875	1	-4.96	790.94	26.1	Pass
L2	77 - 40.5	Pole	TP33.466x27.5075x0.25	2	-9.89	1244.96	64.1	Pass
L3	40.5 - 0	Pole	TP39.12x32.4446x0.3125	3	-16.90	1847.16	77.2	Pass
							Summary	
						Pole (L3)	77.2	Pass
						Base Plate	83.5	Pass
						RATING =	**83.5**	**Pass**