

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

RECEIVED
JUL 25 2012
ORIGINAL CONNECTICUT SITING COUNCIL

July 24, 2012

David Martin
Siting Analyst
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-VER-046-120227 – Cellco Partnership d/b/a Verizon Wireless
197 North Street, Easton, Connecticut**

Dear Mr. Martin:

On March 16, 2012, the Siting Council acknowledged receipt of Cellco's notice of intent to modify its existing telecommunications facility at 197 North Street in Easton. The modification involved the replacement of certain antennas and the installation of coax cable diplexers.

As a condition of the acknowledgement, Cellco was required to provide the Council with a letter stating that the recommendations specified in the structural report were implemented. Attached is a Tower Modification Certification Letter verifying that this condition has been satisfied. All construction associated with these modifications has now been completed.

If you have any questions please do not hesitate to contact me or Rachel Mayo.



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Sincerely,

Kenneth C. Baldwin

Attachment
Copy to:

Sandy M. Carter
Brian Ragozzine
Mark Gauger

Centered on SolutionsSM

July 18, 2012

Mr. Mark Gauger
Verizon Wireless
99 East River Drive
East Hartford, Connecticut 06108

Re: Existing Telecommunications Facility Tower Modification Certification Letter

Project: Verizon ~ Easton North
197 North Street
Easton, CT

Tower Owner: SBA Communications Corporation
5900 Broken Sound Parkway NW
Boca Raton, Florida 33487

Engineer: FDH Engineering
2730 Rowland Ave Raleigh, NC 27615

Centek Project No.: 12005.CO14

Dear Mr. Gauger,

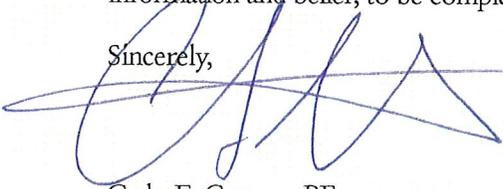
We are providing this "Existing Telecommunications Facility Tower Modification Certification Letter" with regard to the antenna upgrade by Verizon Wireless at the above referenced project.

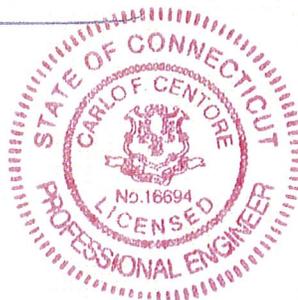
The following are the basis for substantiating compliance with the design documents prepared by FDH Engineering:

- Review of the FDH structural analysis dated 12/28/2011.
- Field observations by Centek personnel of coax installation on 7/13/2012 which determined all coax lines and diplexers were installed according to the recommendations of the structural analysis report prepared by FDH on 12/28/2011.

The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the documents referenced above.

Sincerely,


Carlo F. Centore, PE
Principal ~ Structural Engineer



CC: Rachel Mayo, Tim Parks, Aleksey Tyurin



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 16, 2012

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

RE: **EM-VER-046-120227** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 197 North Street, Easton, 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:

- The coax lines and diplexers be installed in accordance with the recommendations made in the Structural Analysis Report prepared by FDH Engineering dated December 28, 2011 and stamped by Christopher Murphy; and
- Following the installation of the proposed equipment, Verizon shall provide documentation certifying that the installation complied with the engineer's recommendation. 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 February 21, 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,



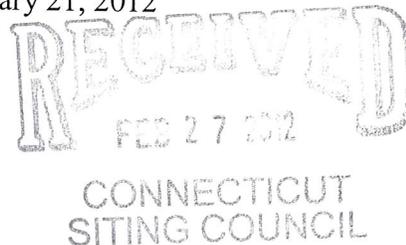
Linda Roberts
Executive Director

LR/CDM/laf

- c: The Honorable Thomas A. Herrmann, First Selectman, Town of Easton
- Philip Doremus, Planning & Zoning Official, Town of Easton
- Hollis Redding, SBA

280 Trumbull Street
Hartford, CT 06103-3597
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Direct (860) 275-8345

February 21, 2012



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

Re: **Notice of Exempt Modification – Antenna Swap
197 North Street, Easton, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 165-foot level on an existing 190-foot tower at the above-referenced address. The tower is owned by SBA. Cellco’s use of the tower was approved by the Council in 2002. Cellco now intends to replace all of its existing antennas with four (4) model SC-E 6014 rev 2 cellular antennas; two (2) model LPA-80063-6CF cellular antennas; three (3) model BXA-171063-8BF PCS antennas; two (2) model SCLP 2X6014 LTE antennas; and one (1) model BXA-70063-6CF LTE antenna, all at the same 165-foot level. Cellco also intends to install six (6) coax cable diplexers on its existing antenna platform. Attached behind Tab 1 are the specifications for the replacement antennas and cable diplexers.

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 Thomas Hermann, First Selectman of the Town of Easton. The Town of Easton is 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 and diplexers will be located at the 165-foot level on the existing 190-foot tower.



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ROBINSON & COLE_{LLP}

Linda Roberts
February 21, 2012
Page 2

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

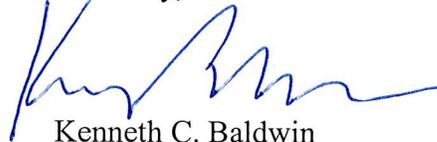
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) power density levels 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 confirming that the tower and foundation can support Cellco's proposed modifications. Contrary to note #1 at the bottom of page 3 of the Structural Analysis, Cellco is not proposing to install any new coax cables at this site. All existing antenna cables are located inside the monopole. (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:

Thomas Hermann, Easton First Selectman
Sandy M. Carter

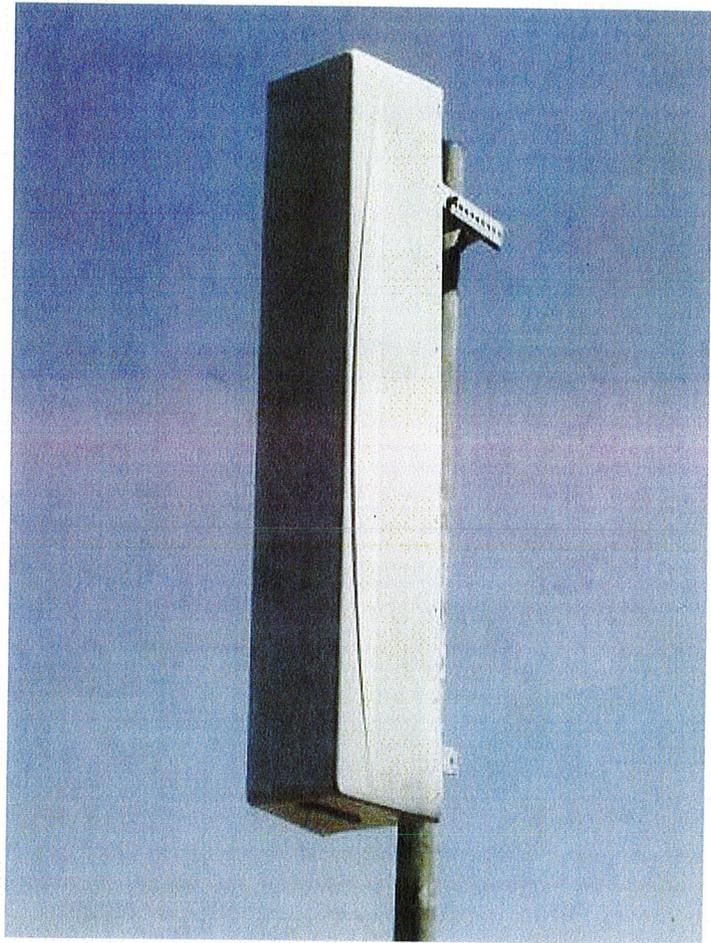


SC-E 6014 rev2

Enhanced 800 - 960 MHz log-periodic antenna

Features

- Small size
- Aesthetically pleasing
- Suitable for TDMA/CDMA/GSM/3G
- High return loss
- Low intermodulation
- High front-to-back ratio
- Outstanding performance over the entire band (800 - 960 MHz)
- Upper side-lobe suppression
- Rugged design
- Dramatically improved signal to interference performance



Electrical specifications

Frequency range:	800-960 MHz
Impedance:	50 ohm
Connector type:	7/16 Din
Return loss:	20 dB
Polarization:	Vertical
Gain:	14 dBd
Front-to-back ratio:	> 30 dB
Upper side-lobe suppression:	18 dB

Intermodulation (2x20W):	IM5 160 dB
	IM7/9 170 dB

Power rating:	500 W
H-plane (-3 dB point):	54 - 60°
V-plane (-3 dB point):	16 - 18°
Lightning protection:	DC grounded

Mechanical specifications

Overall height:	43 in	[1092 mm]
Width:	8.5 in	[216 mm]
Depth:	8 in	[203 mm]
Weight (excluding brackets):	15 lbs	[6.8 Kg]
Wind load measured up to:	150 mph	[240 Km/h]
Wind area (side of antenna):	2.54 sq. ft.	[0.24 sq.m]
Lateral thrust At 113 mph/ 180Km/h (worst case):	122 lbs	[577 N]

Materials

Radiating Elements:	Aluminum
Transformer (Power distribution)	Ceramic PCB
Chassis:	Aluminum
Radome:	Grey Fiberglass/PVC
Tilt-bracket:	Hot dip galvanized steel
Mounting bolts:	Stainless steel

The SC-E 6014 rev2 is made in the U.S.A.

LPA-80063-6CF-EDIN-X

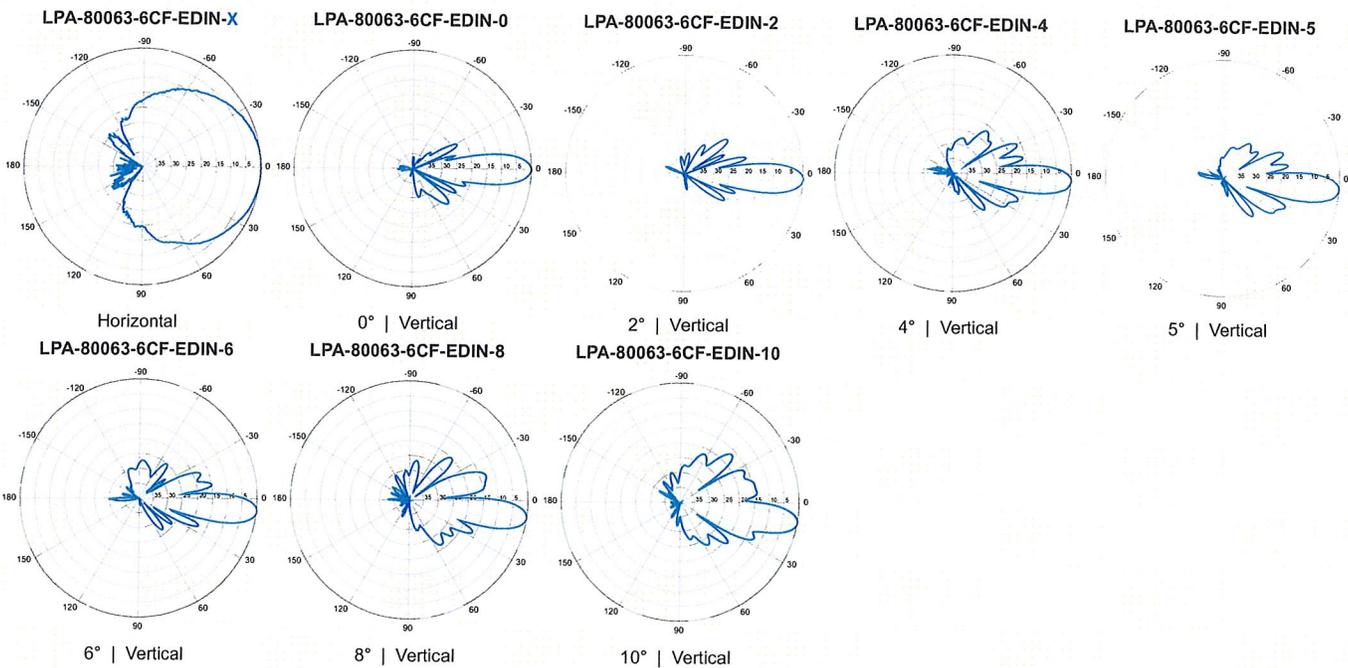
V-Pol | Log Periodic | 63° | 14.5 dBd

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	10°	
Gain	14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.4:1	
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	1805 x 385 x 332 mm 71.1 x 15.2 x 13.1 in	
Depth of antenna with z-bracket	372 mm 14.6 in	
Weight without mounting brackets	12.3 kg 27 lbs	
Survival wind speed	> 201 km/hr > 125 mph	
Wind area	Front: 0.70 m ² Side: 0.59 m ² Front: 7.5 ft ² Side: 6.3 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 885 N Side: 757 N Front: 199 lbf Side: 170 lbf	
Mounting Options		
	Part Number Fits Pipe Diameter Weight	
3-Point Mounting & Downtilt Bracket Kit (0-20°)	21700000 50-102 mm 2.0-4.0 in 11 kg 25 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.	



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

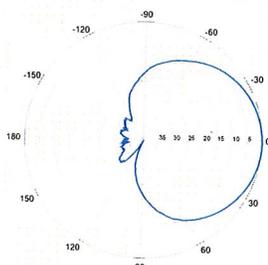
Replace 'X' with desired electrical downtilt.

X-Pol | FET Panel | 63° | 17.4 dBi

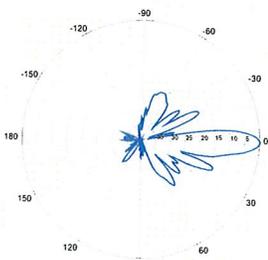


Electrical Characteristics	1710-2170 MHz		
	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	7°	7°	7°
Gain	14.5 dBd / 16.6 dBi	14.9 dBd / 17.0 dBi	15.3 dBd / 17.4 dBi
Electrical 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 m ² Side: 0.14 m ²	Front: 2.0 ft ² Side: 1.5 ft ²	
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

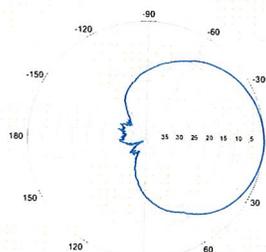


Horizontal | 1710-1880 MHz
BXA-171063-8BF-EDIN-0

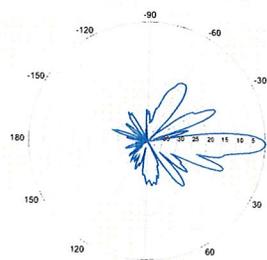


0° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-X

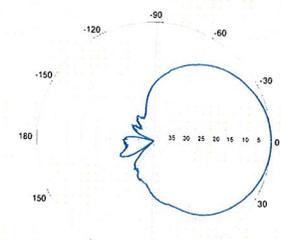


Horizontal | 1850-1990 MHz
BXA-171063-8BF-EDIN-0

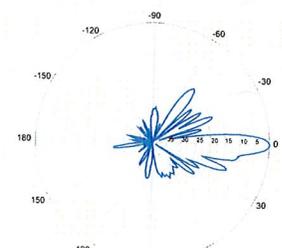


0° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-X



Horizontal | 1920-2170 MHz
BXA-171063-8BF-EDIN-0



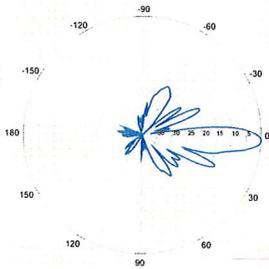
0° | Vertical | 1920-2170 MHz

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.

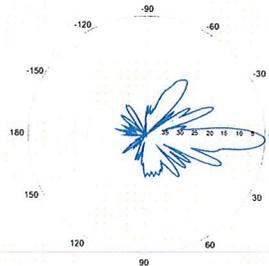
BXA-171063-8BF-EDIN-X

X-Pol | FET Panel | 63° | 17.4 dBi

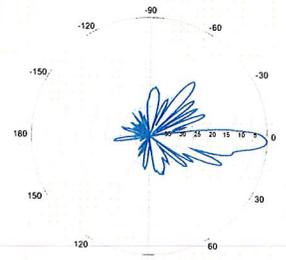
BXA-171063-8BF-EDIN-2



BXA-171063-8BF-EDIN-2

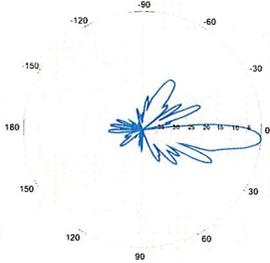


BXA-171063-8BF-EDIN-2



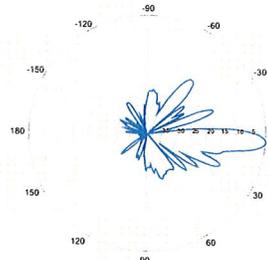
2° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-4



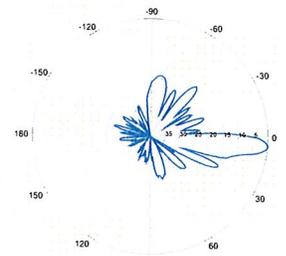
2° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-4



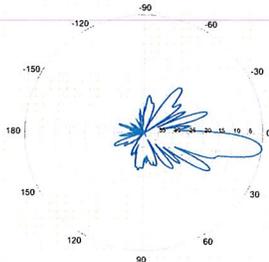
2° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-4



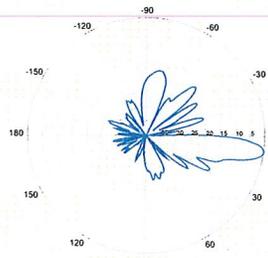
4° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-8



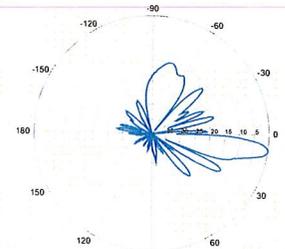
4° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-8



4° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-8



8° | Vertical | 1710-1880 MHz

8° | Vertical | 1850-1990 MHz

8° | Vertical | 1920-2170 MHz

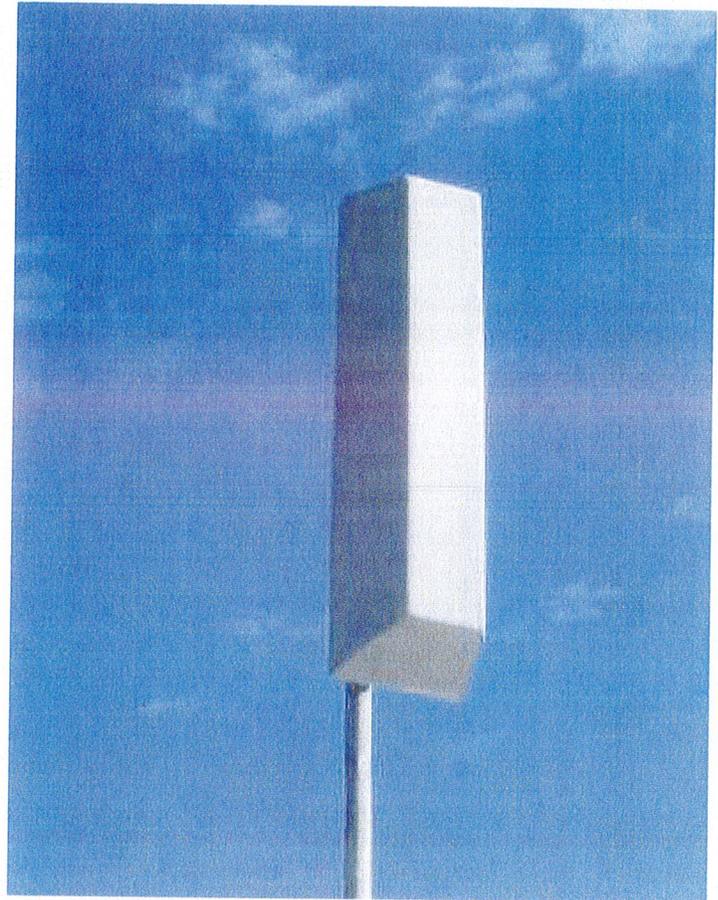
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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

SLCP 2x6014

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]:	2x14 dBdC
Gain ea. port [Linear]:	2x11 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 16°
Lightning protection:	DC grounded

Mechanical specifications

Overall height:	53 in	[1346 mm]
Width:	14 in	[356 mm]
Depth:	11 in	[279 mm]
Weight (excluding brackets):	20 lbs	[9 Kg]
Wind load measured up to:	150 mph	[240 Km/h]
Wind area (side of antenna):	5.15 sq. ft.	[0.48 sq.m]
Lateral thrust at 113 mph/ 180 Km/h (worst case):	263 lbs	[1171 N]

Materials

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

The SLCP 2x6014 is made in the U.S.A.

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

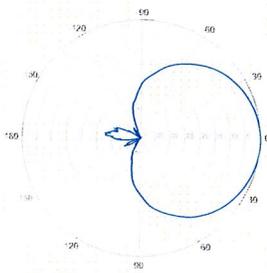
Replace "X" with desired electrical downtilt.

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

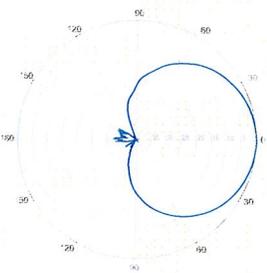


Electrical Characteristics	696-900 MHz		
Frequency bands	696-806 MHz	806-900 MHz	
Polarization	±45°		
Horizontal beamwidth	65°	63°	
Vertical beamwidth	13°	11°	
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10		
Impedance	50Ω		
VSWR	≤1.35:1		
Upper sidelobe suppression (0°)	-18.3 dB	-18.2 dB	
Front-to-back ratio (+/-30°)	-33.4 dB	-36.3 dB	
Null fill	5% (-26.02 dB)		
Isolation between ports	< -25 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	1804 x 285 x 132 mm	71.0 x 11.2 x 5.2 in	
Depth with z-brackets	172 mm	6.8 in	
Weight without mounting brackets	7.9 kg	17 lbs	
Survival wind speed	> 201 km/hr	> 125 mph	
Wind area	Front: 0.51 m ² Side: 0.24 m ²	Front: 5.5 ft ² Side: 2.6 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf	
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X

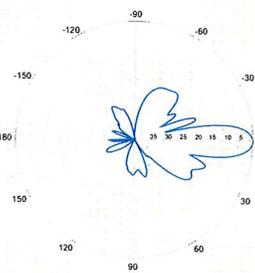


Horizontal | 750 MHz

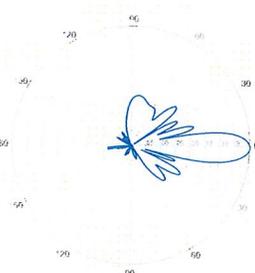


Horizontal | 850 MHz

BXA-70063-6CF-EDIN-0

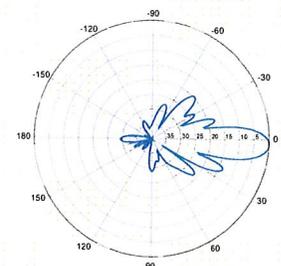


0° | Vertical | 750 MHz

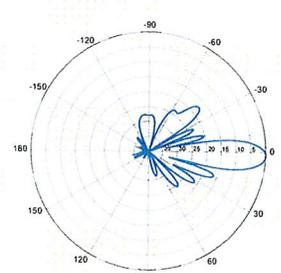


0° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-2



2° | Vertical | 750 MHz



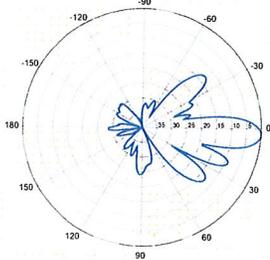
2° | Vertical | 850 MHz

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-70063-6CF-EDIN-X

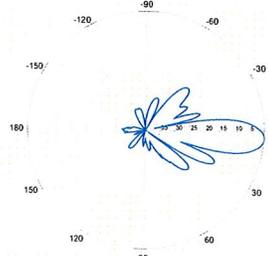
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



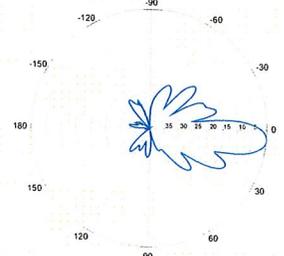
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

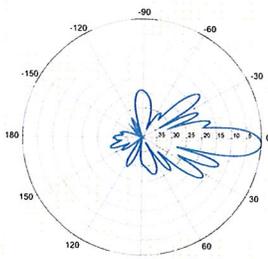


4° | Vertical | 750 MHz

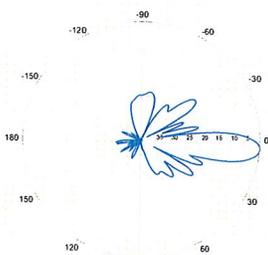
BXA-70063-6CF-EDIN-5



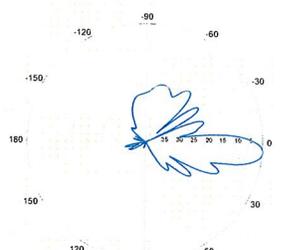
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

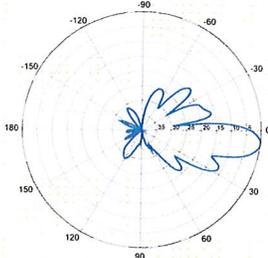


4° | Vertical | 850 MHz



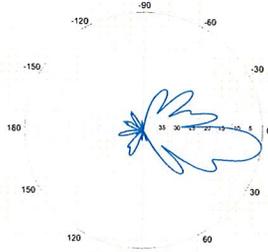
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



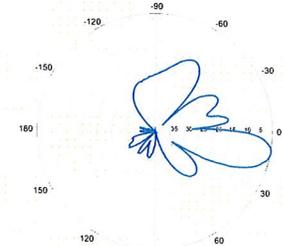
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

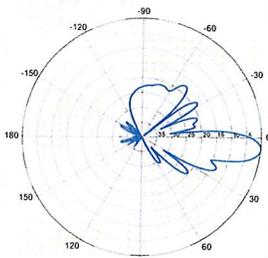


8° | Vertical | 750 MHz

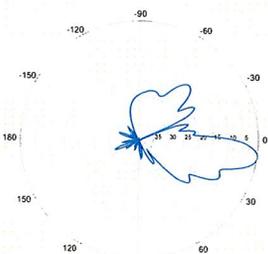
BXA-70063-6CF-EDIN-10



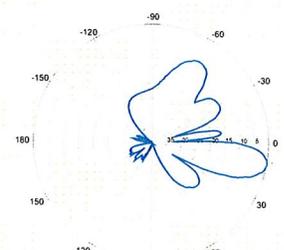
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

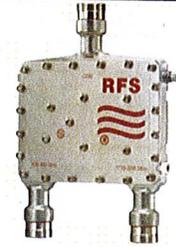
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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



ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Product Description

The ShareLite FD9R6004 Series of diplexers are designed to enable feeder sharing between systems in the 698-960 MHz range and in the 1710-2200 MHz range. The diplexer is equipped with in-line connector placement so it can be installed in the BTS cabinet or at the tower top. This is especially valuable in crowded sites or when the feeders are not easily accessible. Due to its wideband design, the FD9R6004 Series can accommodate many combining solutions between 698-960 MHz and 1710-2200 MHz systems such as LTE 700 MHz, Cellular 800 MHz with PCS, GSM900 with GSM1800, or GSM900 with UMTS. This diplexer features a highly selective filter. It provides a high level of isolation between ports, while keeping the insertion loss on both paths at an extremely low level. The FD9R6004 diplexers are available with various DC pass options, helpful in configurations with or without the Tower Mount Amplifiers installed.



Features/Benefits

- LTE ready design
- Extremely Low Insertion Loss
- High level of Rejection between bands – Protection against interferences
- Extremely High Power Handling Capability
- Integrated DC block/bypass versions available
- Very compact & small size design – Easy installation and reduced tower load
- In-line long-neck connectors for easy connection & waterproofing
- Exceptional reliability & environmental protection (IP 67)
- Equipped with 1 * Breathable Vent – Prevent any humidity inside the product
- Mounting hardware for Wall and Pole mount provided (P/N SEM2-1A)
- Grounding already provided through the mounting bracket
- Kit available for easy dual mount

Technical Specifications

Product Type	Diplexer/Cross Band Coupler
Frequency Range 1, MHz	698-960
Frequency Range 2, MHz	1710-2200
Application	LTE700, GSM900, UMTS, GSM1800, Cellular 800, PCS
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710-2170MHz path, with mounting hardware SEM2-1A
Mounting	Wall Mounting: With 4 screws (maximum 6mm diameter); Pole Mounting: With included clamp set 40-110mm (1.57-4.33)
Return Loss All Ports Min/Typ, dB	19/23
Power Handling Continuous, Max, W	1250 at common port; 750 in low frequency path & 500 in high frequency path
Power Handling Peak, Max, W	15000 in low frequency path & 8000 in high frequency path
Impedance, Ohms	50
Insertion Loss, Path 1, dB	0.07 typ.
Insertion Loss, Path 2, dB	0.13 typ.
Rejection Between Bands Min/Typ, dB	58/64@698-960MHz; 60/70@1710-2200MHz
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
Temperature Range, °C (°F)	-40 to +60 (-40 to +140)
Environmental	ETSI 300-019-2-4 Class 4.1E
Ingress Protection	IP 67
Lightning Protection	EN/IEC61000-4-5 Level 4
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

Notes

All information contained in the present datasheet is subject to confirmation at time of ordering

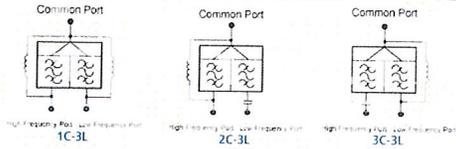


ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Other Documentation

FD9R6004/2C-3L Installation Instructions: [Wideband_Diplexer_Installation_Rev5.pdf](#)

Selection Guide Diplexer 698-960 / 1710-2200MHz					
	Model Number	Full DC Pass	DC Pass High Band	DC Pass Low Band	Mounting Hardware Included
Single	FD9R6004/1C-3L				X
	FD9R6004/2C-3L				X
	FD9R6004/3C-3L				X
Dual	KIT-FD9R6004/1C-DL				X
	KIT-FD9R6004/2C-DL				X
	KIT-FD9R6004/3C-DL				X



The FD9R6004 Series is upgradeable to a Dual Diplexer kit by means of 2 diplexers and mounting hardware kits SEM2-1A and SEM2-3

Mounting Hardware and Ground Cable Ordering Information		
Model Number	Description	
SEM2-1A	Mounting Hardware, Pole mount ø40-110mm (Included with the Single and Dual Diplexer) Wall Screws M6 (Not included with the product)	
SEM2-3	Assembly kit for 2 pcs of FD9R6004/C-3L (Can be ordered separately but included with the Dual Diplexer Kit)	
CA020-2	Ground Cable, 2m, includes lugs (Optional)	
CA030-2	Ground Cable, 2m, includes lugs (Optional)	
SEM6	Mounting Hardware for 6 Diplexers, Tower Base (Optional)	

All information contained in the present datasheet is subject to confirmation at time of ordering

Site Name: Easton N		General		Power		Density							
Tower Height: Verizon @ 165ft													
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total					
*Sprint	11	204.69	185	0.0237	1962.5	1.0000	2.37%						
*VoiceStream	4	286.44	175	0.0135	1930	1.0000	1.35%						
*AT&T UMTS	1	500	155	0.0075	880	0.5867	1.28%						
*AT&T UMTS	1	500	155	0.0075	1900	1.0000	0.75%						
*AT&T GSM	6	296	155	0.0266	880	0.5867	4.53%						
*AT&T GSM	3	427	155	0.0192	1900	1.0000	1.92%						
*AT&T LTE	1	500	155	0.0075	740	0.4933	1.52%						
Verizon PCS	15	259	165	0.0513	1970	1.0000	5.13%						
Verizon Cellular	9	365	165	0.0434	869	0.5793	7.49%						
Verizon AWS	1	647	165	0.0085	2145	1.0000	0.85%						
Verizon 700	1	608	165	0.0080	698	0.4653	1.73%						
* Source: Siting Council													28.90%



FDH Engineering, Inc., 2730 Rowland Rd. Raleigh, NC 27615, Ph. 919.755.1012, Fax 919.755.1031

**Structural Analysis for
SBA Network Services, Inc.**

185' Monopine

**SBA Site Name: North Easton
SBA Site ID: CT00707-S
Verizon Site Name: Easton North**

FDH Project Number 11-05207E S2

Analysis Results

Tower Components	98.6%	Sufficient
Foundation	97.1%	Sufficient

Prepared By:

Tyler Hall, EI
Project Engineer

Reviewed By:

Christopher M. Murphy, PE
President
CT PE License No. 25842

FDH Engineering, Inc.
2730 Rowland Rd.
Raleigh, NC 27615
(919) 755-1012
info@fdh-inc.com

December 28, 2011



Prepared pursuant to TIA/EIA-222-F June 1996 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Easton, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads, pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F*. Information pertaining to the existing/proposed antenna loading, current tower geometry, soil parameters, foundation dimensions, and member sizes was obtained from:

- Paul J. Ford and Company (Job No. 20099-146) original design drawings dated August 10, 1999
- Jaworski Geotech, Inc. (Project No. C98404G) Geotechnical Evaluation dated July 30, 1999
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards is 85 mph without ice and 38 mph with 3/4" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the current and proposed antennas from Verizon in place at 165' (see **Table 1**), the tower meets the requirements of the *TIA/EIA-222-F* standards provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Paul J. Ford Job No. 20099-146), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e. the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards are met with the existing and proposed loading in place, we have the following recommendations:

1. Proposed coax should be installed inside the monopole's shaft.
2. The proposed diplexers should be installed directly behind the proposed panel antennas.

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from this layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 – Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
185	(3) EMS-RR90-17-02DP (6) Allen Telecom FE15S01P77/75 TMAs	(6) 1-5/8"	T-Mobile	185	(3) Cobra Arms
	6' Branches	---	---	---	---
179.5	6' Branches	---	---	---	---
175	(6) Decibel DB980H90E-M	(6) 1-5/8"	Sprint	175	(3) Cobra Arms
174.5	7' Branches	---	---	---	---
169.5	8' Branches	---	---	---	---
165	(6) Antel LPA-80090/4CF (6) Antel LPA-185090/8CF	(12) 1-5/8"	Verizon	165	(3) Cobra Arms
	8' Branches	---	---	---	---
159.5	9' Branches	---	---	---	---
155	(6) Powerwave 7770.00 (3) Powerwave P65-16-XLH-RR (6) Powerwave LGP 21401 TMAs (6) Powerwave LGP21903 Diplexers (6) Ericsson RRUS-11 RRUs (1) Raycap DC6-48-60-18-8F Surge Suppressor	(12) 1-5/8" (1) Fiber (2) DC Power	AT&T	155	(3) Cobra Arms
	9' Branches	---	---	---	---
154.5	10' Branches	---	---	---	---
149.5	11' Branches	---	---	---	---
144.5	11' Branches	---	---	---	---

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
165	(2) Swedcom SLCP 2X6014 (1) Antel BXA 70063/6CF_4 (4) Swedcom SC-E 6014 Rev 2 (2) Antel LPA 80063/6CF (3) Antel BXA 171063/8BF (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	165	(3) Cobra Arms

RESULTS

Based on information obtained from the original design drawings, the yield strength of steel for individual members was as follows:

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	50 ksi
Anchor Bolts	75 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 100% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **APPENDIX** for detailed modeling information.

Table 3 – Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	185 - 143.75	Pole	TP33.22x21.375x0.1875	98.6	Pass
L2	143.75 - 94.0833	Pole	TP47.108x31.6042x0.375	95.4	Pass
L3	94.0833 - 46.1667	Pole	TP60.118x44.6114x0.4375	91.6	Pass
L4	46.1667 - 0	Pole	TP72.5x56.9936x0.4375	96.6	Pass
		Anchor Bolts	(24) 2.25" \emptyset w/ BC = 79.875" BC	89.5	Pass
		Base Plate	79.625" SQ. PL x 3.5" thk.	61.4	Pass

*Capacities include 1/3 allowable increase for wind.

Table 4 – Maximum Base Reactions

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	57 k*	52 k
Shear	51 k	53 k
Moment	7,062 k-ft	7,275 k-ft

*Given our experience with foundations of a similar nature, the vertical load will not control.

GENERAL COMMENTS

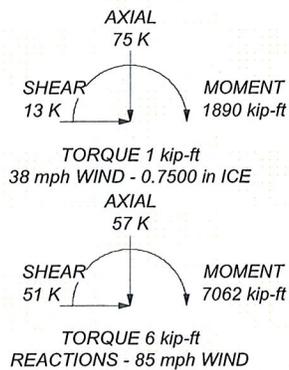
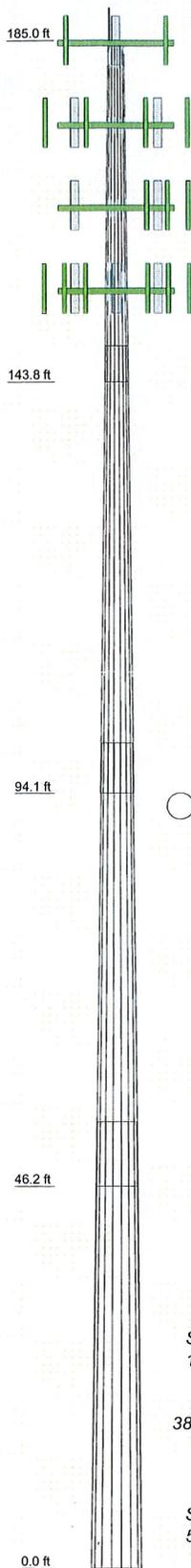
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX

Section	1	2	3	4
Length (ft)	41.25	54.00	54.00	54.00
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.3750	0.4375	0.4375
Socket Length (ft)	4.33	6.08	7.83	
Top Dia (in)	21.3750	31.6007	44.6110	56.9935
Bot Dia (in)	33.2200	47.1080	60.1180	72.5000
Grade			A572-65	
Weight (K)	2.3	8.5	13.2	16.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	185	(2) LPA-80063/6CF w/ Mount Pipe	165
RR90-17-02DP w/Mount Pipe	185	Antel BXA-70063/6CF-4 W/Mount Pipe	165
RR90-17-02DP w/Mount Pipe	185		
RR90-17-02DP w/Mount Pipe	185	(3) BXA-171063-8BF-EDIN-X w/ Mount Pipe	165
(3) Empty Pipe Mount	185	8' Branches	164.5
(3) Empty Pipe Mount	185	9' Branches	159.5
(3) Empty Pipe Mount	185	(2) LGP 21401 TMA	155
(2) FE15S01P77775 TMA	185	(2) LGP 21401 TMA	155
(2) FE15S01P77775 TMA	185	(2) LGP 21401 TMA	155
(2) FE15S01P77775 TMA	185	(2) LGP21903 Diplexer	155
(3) Cobra Mounts	185	(2) LGP21903 Diplexer	155
6' Branches	185	(2) LGP21903 Diplexer	155
6' Branches	179.5	(2) RRU 11 RRU	155
(2) DB980H90E-M w/Mount Pipe	175	(2) RRU 11 RRU	155
(2) Empty Pipe Mount	175	(2) RRU 11 RRU	155
(2) Empty Pipe Mount	175	Raycap DC6-48-60-18-8F Surge Suppressor	155
(2) Empty Pipe Mount	175	(3) Cobra Mounts	155
(3) Cobra Mounts	175	(2) 7770.00 W/Mount Pipe	155
(2) DB980H90E-M w/Mount Pipe	175	(2) 7770.00 W/Mount Pipe	155
(2) DB980H90E-M w/Mount Pipe	175	(2) 7770.00 W/Mount Pipe	155
7' Branches	174.5	P65-16-XLH-RR w/Mount Pipe	155
8' Branches	169.5	P65-16-XLH-RR w/Mount Pipe	155
(4) SC-E 6014 Rev 2 w/ Mount Pipe	165	P65-16-XLH-RR w/Mount Pipe	155
(2) RFS FD9R6004/2C-3L Diplexer	165	9' Branches	154.5
(2) RFS FD9R6004/2C-3L Diplexer	165	10' Branches	149.5
(2) RFS FD9R6004/2C-3L Diplexer	165	11' Branches	144.5
(3) Cobra Mounts	165		
(2) SLCP 2X6014 w/Mount Pipe	165		

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 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.6%

 FDH Engineering, Inc. 2730 Rowland Road Raleigh, NC 27615 Phone: (919) 755-1012 FAX: (919) 755.1031	Job: North Easton, CT00707-S Project: 11-05207E S2 Client: SBA Network Services, Inc. Code: TIA/EIA-222-F Path:	Drawn by: T. Hall Date: 12/28/11 Scale: NTS Dwg No.: E-1
	Tower Analysis	
	Job: North Easton, CT00707-S Project: 11-05207E S2 Client: SBA Network Services, Inc. Code: TIA/EIA-222-F Path:	
	Drawn by: T. Hall Date: 12/28/11 Scale: NTS Dwg No.: E-1	