



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

April 17, 2012

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

RE: **EM-VER-048-120330** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 101 Burbank Road, Ellington, Connecticut.

Dear Attorney Baldwin:

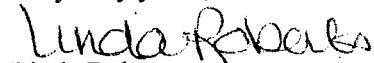
The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The coax lines and diplexers be installed in accordance with the recommendations made in the Structural Analysis Report prepared by FDH Engineering dated March 20, 2012 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 March 29, 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,



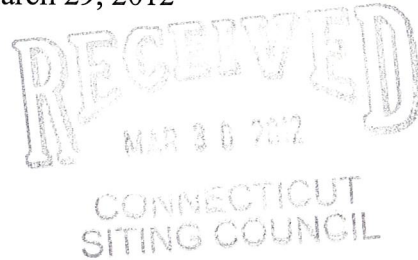
Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Maurice W. Blanchette, First Selectman, Town of Ellington
Robert Phillips, Town Planner, Town of Ellington
Hollis Redding, SBA

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

March 29, 2012



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

Re: **Notice of Exempt Modification – Antenna Swap
101 Burbank Road, Ellington, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 177-foot level on an existing 180-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 2000. Cellco now intends to replace all of its existing antennas with six (6) model LPA-80080-4CF cellular antennas; three (3) model BXA-171085-8BF PCS antennas; two (2) model BXA-70063-4CF LTE antennas; and one (1) model BXA-70080-4CF LTE antenna, all at the 177-foot level. Cellco also intends to attach six (6) coax cable diplexers to its existing antenna mounts directly behind its proposed antennas. Attached behind Tab 1 are the specifications for the replacement antennas and 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 Maurice W. Blanchette, First Selectman of the Town of Ellington. A copy of this letter is also being sent to Donald E. and Rosalie M. Stavens, Trustees, the owners 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 177-foot level on the existing 180-foot tower.



Law Offices

BOSTON

PROVIDENCE

HARTFORD

NEW LONDON

STAMFORD

WHITE PLAINS

NEW YORK CITY

ALBANY

SARASOTA

www.rc.com

ROBINSON & COLE^{LLP}

Linda Roberts
March 29, 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. (See Tab 3). Please note that Cellco's existing coax cables are currently installed as shown in Figure 1, consistent with Recommendation No. 1 on page 3 of the Structural Analysis.

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:

Maurice W. Blanchette, Ellington First Selectman
Donald E. and Rosalie M. Stavens, Trustees
Sandy M. Carter

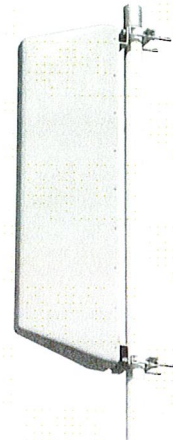


LPA-80080-4CF-EDIN-X

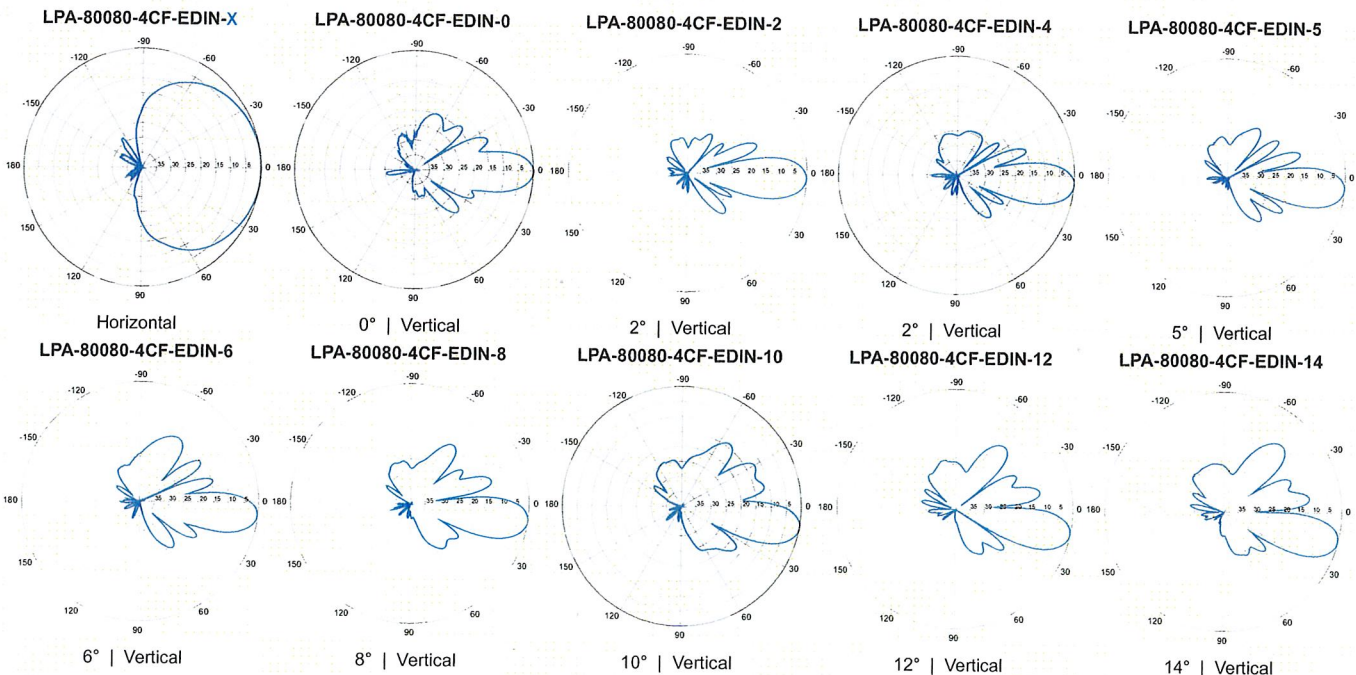
V-Pol | Log Periodic | 80° | 12.5 dBd

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	80°		
Vertical beamwidth	15°		
Gain	12.5 dBd (14.6 dBi)		
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14		
Impedance	50Ω		
VSWR	≤1.4:1		
Upper sidelobe suppression (0°)	-14.2 dB		
Front-to-back ratio (+/-30°)	-34.7 dB		
Null fill	15% (-16.48 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	1200 x 140 x 335 mm 47.2 x 5.5 x 13.2 in		
Depth of antenna with z-bracket	375 mm 14.8 in		
Weight without mounting brackets	5.4 kg 12 lbs		
Survival wind speed	> 201 km/hr > 125 mph		
Wind area	Front: 0.17 m ² Side: 0.40 m ² Front: 1.8 ft ² Side: 4.3 ft ²		
Wind load @ 161 km/hr (100 mph)	Front: 254 N Side: 574 N Front: 57 lbf Side: 129 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.		



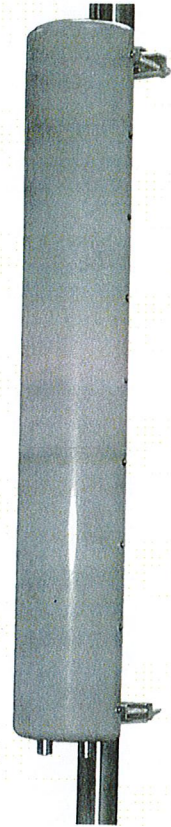
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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

BXA-171085-8BF-EDIN-X

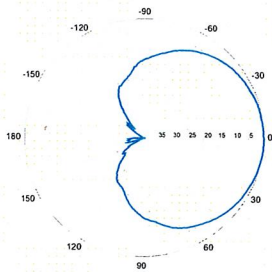
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 85° | 16.4 dBi

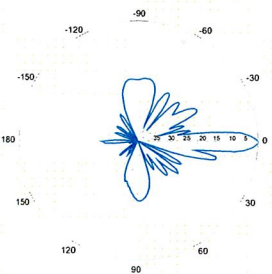
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	7°	7°	7°
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
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 l-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-171085-8BF-EDIN-X-FP		



Horizontal | 1710-1880 MHz
BXA-171085-8BF-EDIN-0

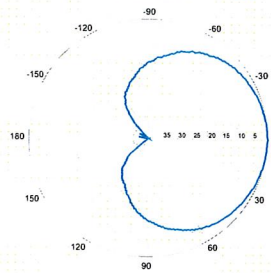


0° | Vertical | 1710-1880 MHz

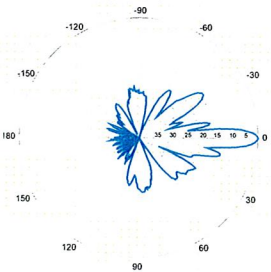


0° | Vertical | 1710-1880 MHz

Horizontal | 1850-1990 MHz
BXA-171085-8BF-EDIN-0

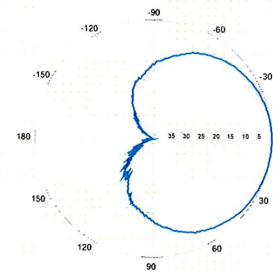


0° | Vertical | 1850-1990 MHz

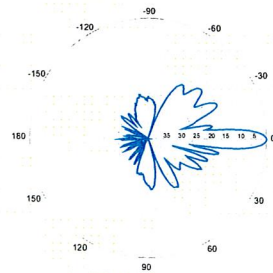


0° | Vertical | 1850-1990 MHz

Horizontal | 1920-2170 MHz
BXA-171085-8BF-EDIN-0



0° | Vertical | 1920-2170 MHz



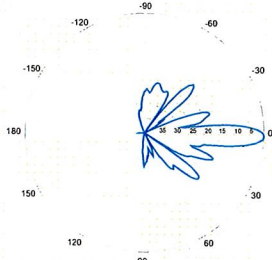
0° | Vertical | 1920-2170 MHz

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-171085-8BF-EDIN-X

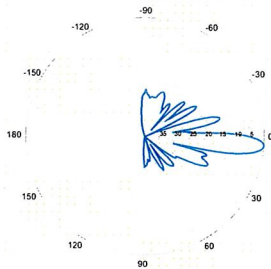
X-Pol | FET Panel | 85° | 16.4 dBi

BXA-171085-8BF-EDIN-2



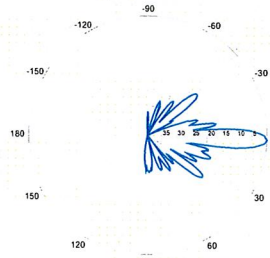
2° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-4



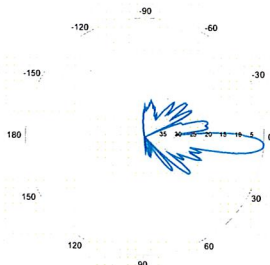
4° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-2



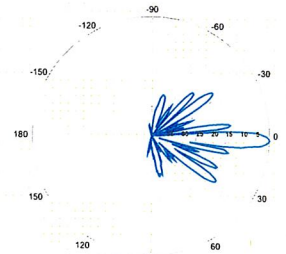
2° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-4



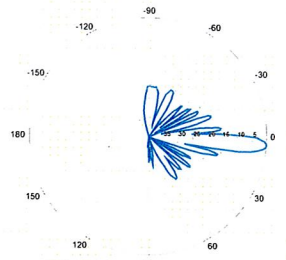
4° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-2



2° | Vertical | 1920-2170 MHz

BXA-171085-8BF-EDIN-4



4° | Vertical | 1920-2170 MHz

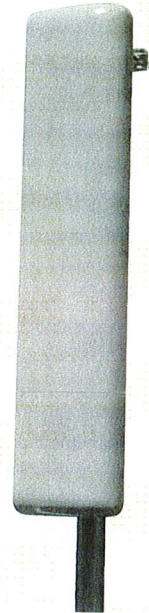
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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

BXA-70063-4CF-EDIN-X

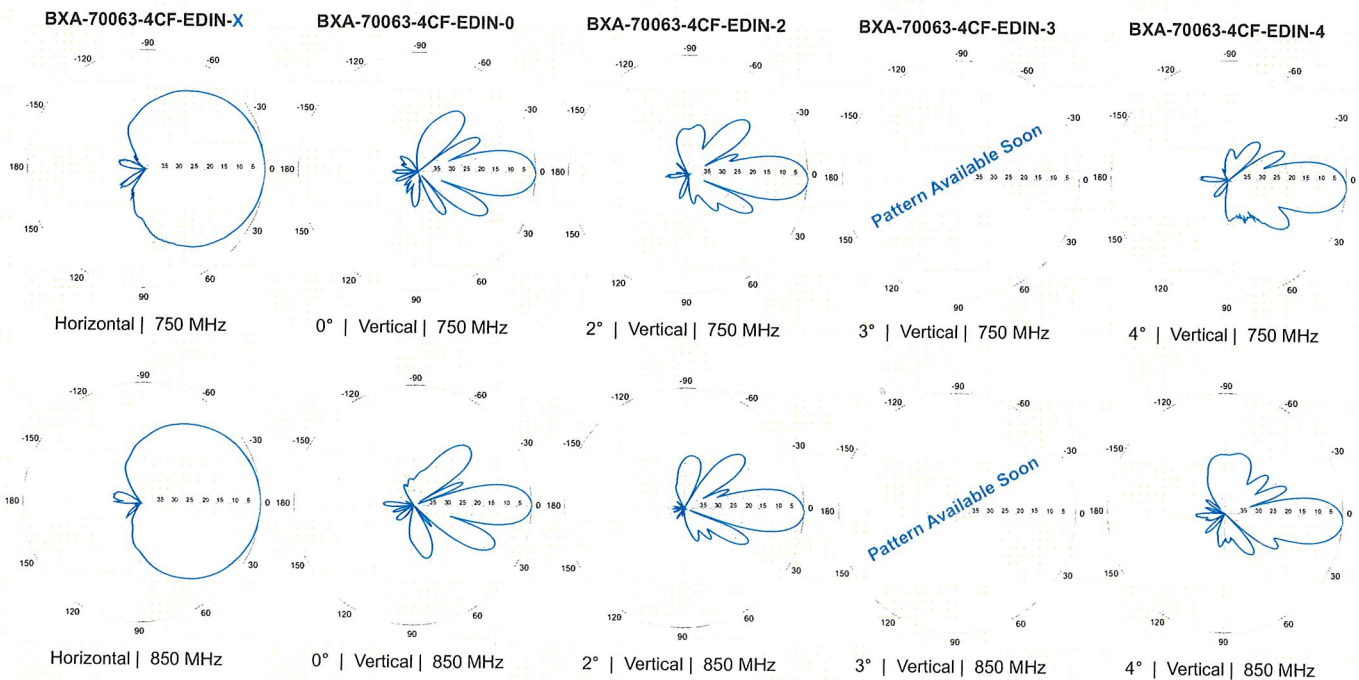
X-Pol | FET Panel | 63° | 13.0 dBd

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 m ² Side: 0.16 m ²	Front: 3.7 ft ² Side: 1.7 ft ²	
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 Bracket Kit	36210002	50-160 mm 2.0-6.3 in	4.5 kg 10 lbs
2-Point Downtilt Bracket Kit (0-20°)	36114003	50-160 mm 2.0-6.3 in	4.9 kg 11 lbs
Downtilt Mounting Applications	A mounting bracket and downtilt bracket kit must be ordered for downtilt applications		
Concealment Configurations	For concealment configurations, order BXA-70063-4CF-EDIN-X-FP		

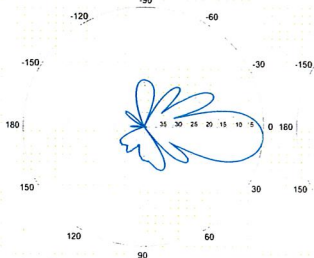


Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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

BXA-70063-4CF-EDIN-X

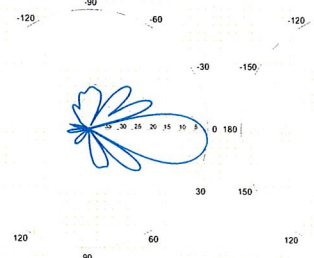
X-Pol | FET Panel | 63° | 13.0 dBd

BXA-70063-4CF-EDIN-5



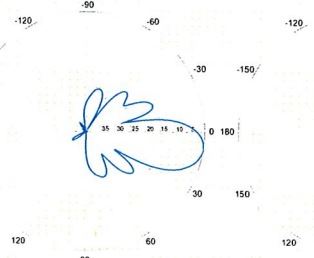
5° | Vertical | 750 MHz

BXA-70063-4CF-EDIN-6



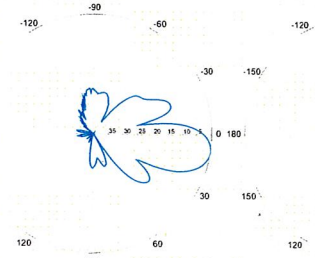
6° | Vertical | 750 MHz

BXA-70063-4CF-EDIN-8



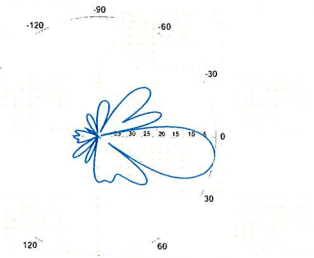
8° | Vertical | 750 MHz

BXA-70063-4CF-EDIN-9

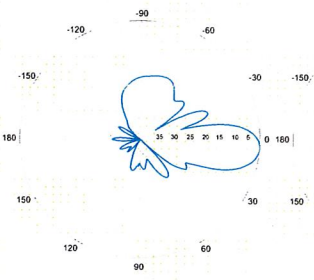


9° | Vertical | 750 MHz

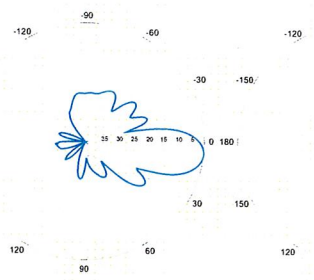
BXA-70063-4CF-EDIN-10



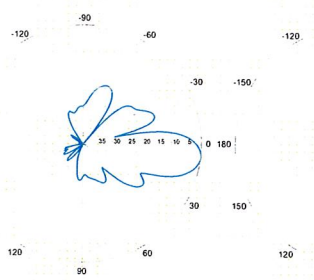
10° | Vertical | 750 MHz



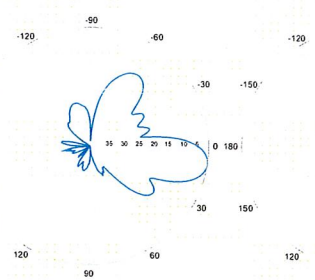
5° | Vertical | 850 MHz



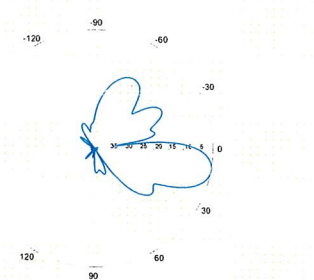
6° | Vertical | 850 MHz



8° | Vertical | 850 MHz

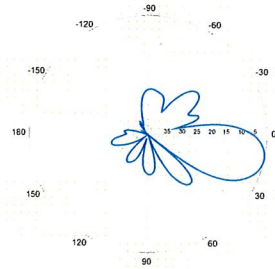


9° | Vertical | 850 MHz

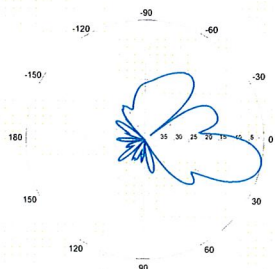


10° | Vertical | 850 MHz

BXA-70063-4CF-EDIN-12

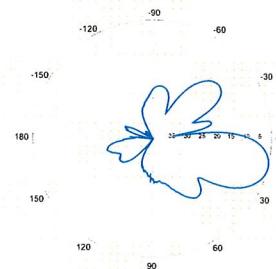


12° | Vertical | 750 MHz

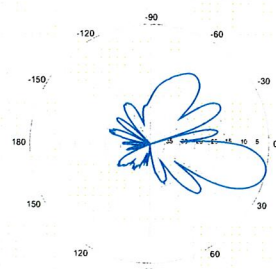


12° | Vertical | 850 MHz

BXA-70063-4CF-EDIN-14



14° | Vertical | 750 MHz



14° | 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.

Mechanical specifications

Length	1214 mm	47.8 in
Width	284 mm	11.2 in
Depth	151 mm	5.9 in
Depth with z-bracket	191 mm	7.5 in
Weight ⁴⁾	6.1 kg	13 lbs
Wind Area Fore/Aft	0.35 m ²	3.7 ft ²
Wind Area Side	0.18 m ²	1.9 ft ²
Max Wind Survivability	>201 km/hr	>125 mph
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	458 N	103 lbf
Side	245 N	55 lbf

Antenna consisting of aluminum alloy with brass feedlines covered by a gray, UV safe fiberglass radome. RoHS compliant.

Mounting & Downtilting

Mounting hardware attaches to pipe diameter $\varnothing 50$ -160 mm; $\varnothing 2.0$ -6.3 in.

Mounting Bracket Kit	36210002
Downtilt Bracket Kit	36114003

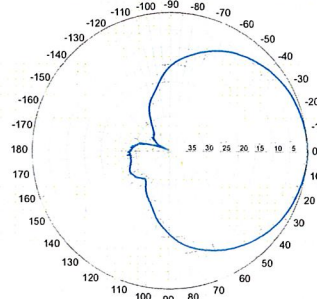
Electrical specifications

Frequency Range	696-900 MHz
Impedance	50 Ω
Connector ³⁾	NE or E-DIN Female 2 ports / Center
VSWR ¹⁾	$\leq 1.35:1$
Polarization	Slant $\pm 45^\circ$
Isolation Between Ports ¹⁾	< -30 dB
Gain ¹⁾	12.0 dBd 14.0 dBi
Power Rating ²⁾	500 W
Half Power Angle ¹⁾	
Horizontal Beamwidth	80°
Vertical Beamwidth	15°
Electrical downtilt ⁵⁾	0°
Null fill ¹⁾	5%
Lightning protection	Direct ground
Patented Dipole Design: U.S. Patent No. 6,608,600 B2	

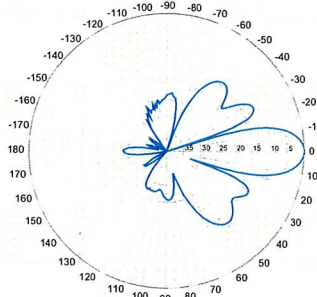
- 1) Typical values.
- 2) Power rating limited by connector only.
- 3) NE indicates an elongated N connector.
E-DIN indicates an elongated DIN connector.
- 4) Antenna weight does not include brackets.
- 5) Add'l downtilts may be available. Check website for details.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Radiation-pattern¹⁾
750 MHz

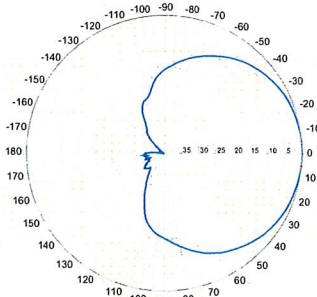


Horizontal

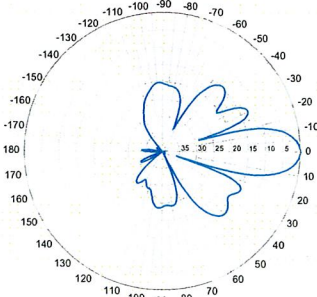


Vertical

850 MHz



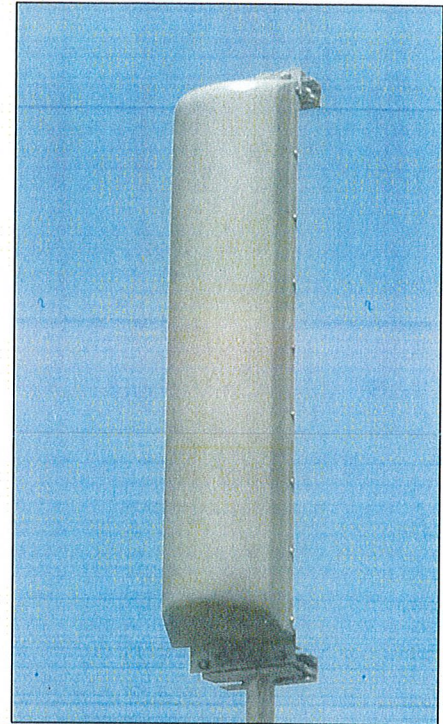
Horizontal



Vertical

BXA-70080/4CF

When ordering replace " " with connector type.



Featuring our Exclusive
3T Technology™
Antenna Design:

- Watercut brass feedline assembly for consistent performance.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

Warranty:

This antenna is under a five-year limited warranty for repair or replacement.

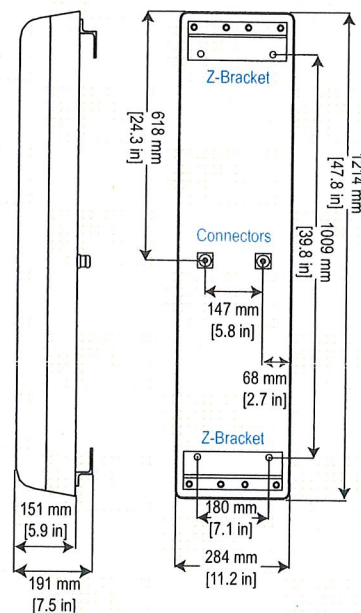
Revision Date: 1/5/09

696-900 MHz

Slant $\pm 45^\circ$ Dual Polarized Panel $80^\circ / 12.0$ dBd
696-900 MHz

BXA-70080/4CF

When ordering replace " _ " with connector type.



- 1) Typical values.
- 2) Power rating limited by connector only.
- 3) NE indicates an elongated N connector.
E-DIN indicates an elongated DIN connector.
- 4) Antenna weight does not include brackets.
- 5) Add'l downtilts may be available. Check website for details.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

696-900 MHz

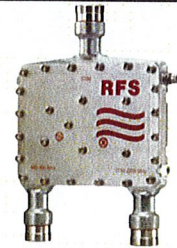
815.399.0001 • antel@antelinc.com • www.antelinc.com



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

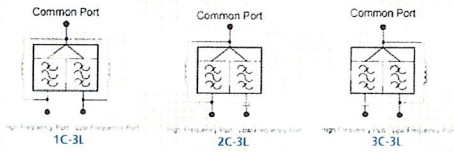


ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

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/xC-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: Ellington		General		Power		Density							
Tower Height: Verizon @ 177ft													
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total					
*VoiceStream	8	245.7	186	0.0204	1930	1.0000	2.04%						
*Crossroads	1	500	196	0.0047	152.35	0.2000	2.34%						
*Crossroads	backup for above antenna												
*Cingular UMTS	1	500	156	0.0074	880	0.5867	1.26%						
*Cingular - GSM	2	296	156	0.0087	880	0.5867	1.49%						
*Cingular - GSM	2	427	156	0.0126	1900	1.0000	1.26%						
Verizon PCS	11	209	177	0.0264	1970	1.0000	2.64%						
Verizon Cellular	9	233	177	0.0241	869	0.5793	4.15%						
Verizon AWS	1	670	177	0.0077	2145	1.0000	0.77%						
Verizon 700	1	547	177	0.0063	698	0.4653	1.35%						
								17.31%					
* Source: Siting Council													



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

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

181.5' Self-Support Tower

**SBA Site Name: Ellington
SBA Site ID: CT10008-A
Verizon Site Name: Ellington CT**

FDH Project Number 12-02241E S1 R1

Analysis Results

Tower Components	61.7%	Sufficient
Foundation	65.0%	Sufficient

Prepared By:

Chad Barham
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



March 20, 2012

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the 2005 Connecticut State Building Code

TABLE OF CONTENTS

EXECUTIVE SUMMARY3
 Conclusions.....3
 Recommendations3
APPURTENANCE LISTING4
RESULTS5
GENERAL COMMENTS8
LIMITATIONS8
APPENDIX9

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the existing self-supported tower located in Ellington, 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 and the 2005 Connecticut State Building Code*. Information pertaining to the existing/proposed antenna loading, soil parameters, current tower geometry, the member sizes, and foundation dimensions was obtained from:

- Rohn Industries (File No. 42895AE) original tower and foundation drawings dated April 3, 2000
- Applied Earth Technologies (Site Address 101 Burbank Rd. Ellington ,CT) Report on Subsurface Investigation dated February 14, 2000
- FDH Inc. (Project No. 07-0316T) TIA Inspection Report dated April 11, 2007
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F standards and the 2005 Connecticut State Building Code* is 85 mph without ice and 38 mph with 1 " radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from Verizon in place at 177 ft, the tower meets the requirements of the *TIA/EIA-222-F standards and the 2005 Connecticut State Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundations were designed and constructed to support the original design reactions (see Rohn Industries File No. 42895AE), the foundations 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 and the 2005 Connecticut State Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. Coax must be installed as shown in **Figure 1**.
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 the 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
194.5	(1) Decibel DB222-A Dipole	(1) 1-1/4"	NE Site Management	189	Direct Mount
186	(6) EMS RR90-17-02DP w/Mount Pipe (6) Decibel DBE15501P64D TMAs	(6) 1-5/8"	T-Mobile	186	(3) 13' T-Frames
177	(6) Swedcom ALP-E-9011 w/Mount Pipe (6) Decibel 948F85T2E-M w/ Mount Pipe	(12) 1-5/8"	Verizon	177	(3) 14' T-Frames
157	(9) CSS DUO-048670 w/Mount Pipe (3) Powerwave 7770.00A w/Mount Pipe (6) ADC 1283019 TMAs (3) CSS 999002 Combiners (3) Diplexers	(15) 1-5/8"	Cingular	157	(3) 12' T-Frames
78	(1) GPS	(1) 1/2"	Verizon	78	Direct Mount
32	(1) GPS	(1) 1/2"	Cingular	32	Direct Mount

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
177	(2) Antel BXA-70063/4CF w/ Mount Pipe (6) Antel LPA-80080/4CF W/Mount Pipe (3) Antel BXA-171085-8BF-EDIN-X w/Mount Pipe (1) Antel BXA-70080/4CF w/ Mount Pipe (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	177	(3) 14' T-Frames

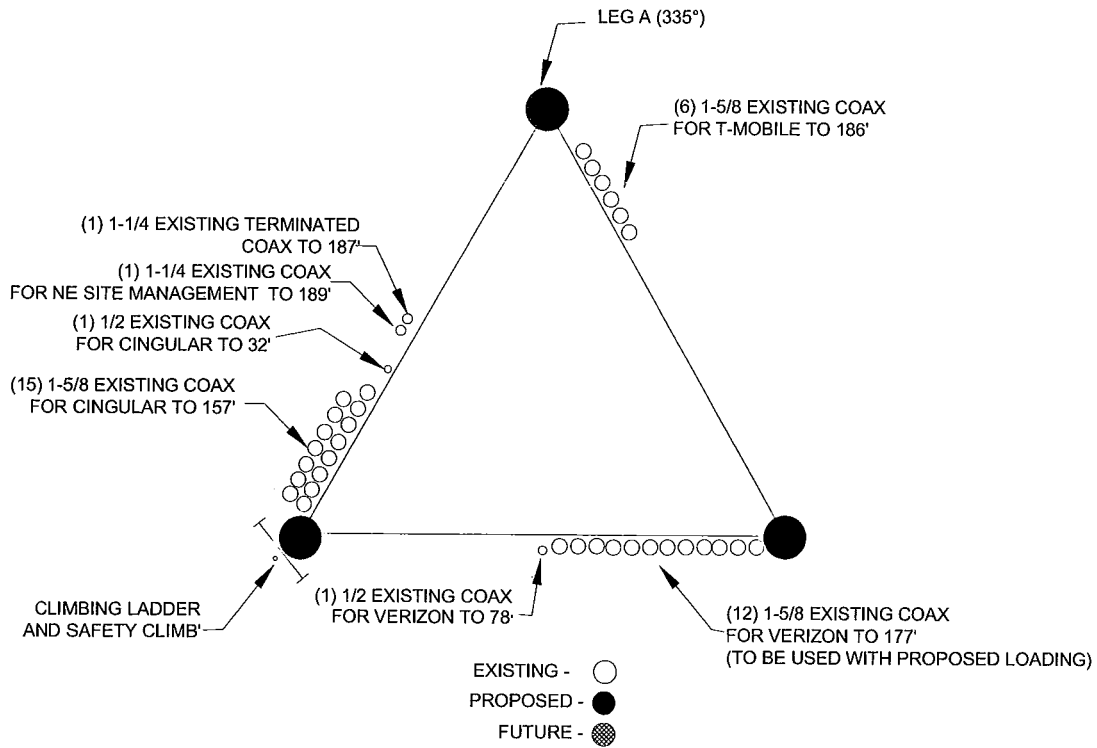


Figure 1- Coax Layout

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Legs	50 ksi
Bracing	50 ksi & 36 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 105% 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
T1	181.5 - 161.333	Leg	P2x.203	38.2	Pass
		Diagonal	L2x2x1/4	20.4 41.1 (b)	Pass
		Top Girt	L2x2x1/4	1.7	Pass
		Bottom Girt	L2x2x1/4	52.4	Pass
T2	161.333 - 141.167	Leg	P3x.3	26.8 44.2 (b)	Pass
		Diagonal	L2x2x1/4	0.2	Pass
		Top Girt	L2x2x1/4	55.6	Pass
T3	141.167 - 121	Leg	Pipe 4.5" x 0.337" (4 XS)	43.7 47.0 (b)	Pass
		Diagonal	L2x2x1/4	53.2	Pass
T4	121 - 100.834	Leg	Pipe 5.563" x 0.375" (5 XS)	40.0 51.5 (b)	Pass
		Diagonal	L2 1/2x2 1/2x1/4	57.1	Pass
T5	100.834 - 80.667	Leg	Pipe 6 EH	56.9	Pass
		Diagonal	L2 1/2x2 1/2x1/4	54.3	Pass
T6	80.667 - 60.5004	Leg	Pipe 6.625" x 0.432" (6 XS)	47.4	Pass
		Diagonal	L3x3x1/4	54.8	Pass
T7	60.5004 - 40.3338	Leg	P8x.375	49.0 50.2 (b)	Pass
		Diagonal	L3 1/2x3 1/2x1/4	47.7 48.1 (b)	Pass
T8	40.3338 - 20.1672	Leg	Pipe 8.625" x 0.50" (8 XS)	46.0 59.9 (b)	Pass
		Diagonal	L4x4x1/4	53.4	Pass
T9	20.1672 - 0	Leg	Pipe 8.625" x 0.50" (8 XS)	56.4 61.7 (b)	Pass
		Diagonal	L4x4x1/4	56.7	Pass

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
				61.8 (b)	

Table 4 - Maximum Base Reactions

Load Type	Direction	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Individual Foundation	Horizontal	25 k	59 k
	Uplift	202 k	333 k
	Compression	239 k	369 k
Overturning Moment	---	4,117 k-ft	6,330 k-ft

GENERAL COMMENTS

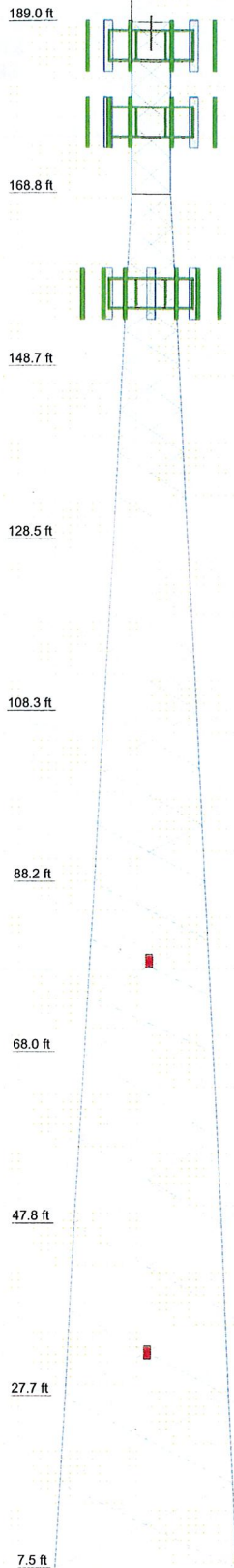
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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	T1	T2	T3	T4	T5	T6	T7	T8	T9	
Legs	ROHN 2.5 STD	ROHN 3 EH	ROHN 4 EH	ROHN 5 EH	ROHN 6 EHS	ROHN 6 EH	ROHN 8 EHS	ROHN 8 EH	ROHN 8 EH	
Leg Grade					A572-50					
Diagonals		L2x2x1/4		L2 1/2x2 1/2x1/4		L3x3x1/4	L3 1/2x3 1/2x1/4	L4x4x1/4		
Diagonal Grade			A36			N.A.				
Top Girts	L3x3x1/4	L2x2x1/4								
Face Width (ft)	4.58	6.63	8.68	10.78	12.91	14.92	17.09	19.04	21.12	
# Panels @ (ft)	10 @ 4	4 @ 5	9 @ 6.666	6 @ 10						
Weight (K)	1.0	1.3	1.6	2.1	2.4	3.1	3.3	4.3	4.4	23.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DB222-A	189	(2) FD9R6004/2C-3L Diplexer	177
Lightning Rod 5/8x4'	187.5	(2) FD9R6004/2C-3L Diplexer	177
(2) RR90-17-02DP w/Mount Pipe	186	(2) FD9R6004/2C-3L Diplexer	177
(2) RR90-17-02DP w/Mount Pipe	186	(3) 13' T-Frames	177
(2) RR90-17-02DP w/Mount Pipe	186	CSS 999002 Combiner	157
(2) Decibel DBE15501P64D TMA	186	Swedcom SFCP 800/1850 Diplexer	157
(2) Decibel DBE15501P64D TMA	186	Swedcom SFCP 800/1850 Diplexer	157
(2) Decibel DBE15501P64D TMA	186	Swedcom SFCP 800/1850 Diplexer	157
(2) Pipe Mount	186	(3) 14' T-Frames	157
(2) Pipe Mount	186	(3) DU04-8670 w/Mount Pipe	157
(2) Pipe Mount	186	(3) DU04-8670 w/Mount Pipe	157
(3) 13' T-Frames	186	(3) DU04-8670 w/Mount Pipe	157
(3) 12' T-Frames	177	7770.00 w/Mount Pipe	157
(2) BXA-70063/4CF w/ Mount Pipe	177	7770.00 w/Mount Pipe	157
(2) LPA-80080/4CF W/Mount Pipe	177	7770.00 w/Mount Pipe	157
(2) LPA-80080/4CF W/Mount Pipe	177	(2) 1283019 TMA	157
(2) LPA-80080/4CF W/Mount Pipe	177	(2) 1283019 TMA	157
(2) BXA-171085-8BF-EDIN-X w/Mount Pipe	177	(2) 1283019 TMA	157
BXA-171085-8BF-EDIN-X w/Mount Pipe	177	CSS 999002 Combiner	157
BXA-70080/4CF w/ Mount Pipe	177	CSS 999002 Combiner	157
		GPS	78
		GPS	32

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

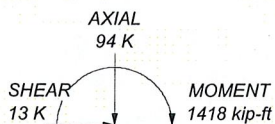
TOWER DESIGN NOTES

1. Tower is located in Tolland 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 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 62.7%

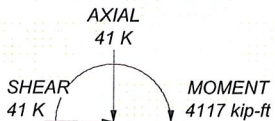
MAX. CORNER REACTIONS AT BASE:

DOWN: 239 K
SHEAR: 25 K


UPLIFT: -202 K
SHEAR: 22 K



TORQUE 5 kip-ft
38 mph WIND - 1.0000 in ICE



TORQUE 13 kip-ft
REACTIONS - 85 mph WIND

 FDH Engineering, PC. 2730 Rowland Rd. Raleigh NC 27615 Raleigh NC 27615 Phone: (919) 755-1012 FAX: (919) 755-1031	Job: Ellington CT10008-A Project: 12-02241E51
	Client: SBA Code: TIA/EIA-222-F Path: C:\Users\FDH\Desktop\Ellington_CTS1-SA_VetronAnalysis\Ellington_CT10008-A.er

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

April 30, 2013

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

Re: **EM-VER-048-120330 – Cellco Partnership d/b/a Verizon Wireless
101 Burbank Road, Ellington, Connecticut**

Dear Mr. Martin:

On April 17, 2012, the Siting Council acknowledged receipt of Cellco's notice of intent to modify its telecommunications facility at 101 Burbank Road in Ellington. 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 these conditions have 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.

Sincerely,



Kenneth C. Baldwin

Attachment
Copy to:

Sandy M. Carter
Brian Ragozzine
Mark Gauger



Law Offices

BOSTON

PROVIDENCE

HARTFORD

NEW LONDON

STAMFORD

WHITE PLAINS

NEW YORK CITY

ALBANY

SARASOTA

www.rc.com

Centered on Solutions™

April 3, 2013

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

Re: Existing Telecommunications Facility Tower Modification Certification Letter

Project: Verizon ~ Ellington
101 Burbank Road
Ellington, 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.CO53

Dear Mr. Gauger,

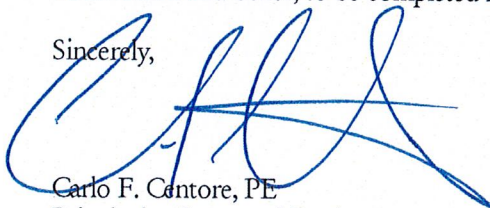
We are providing this "Existing Telecommunications Facility Tower Modification Certification Letter" with regard to the antenna upgrade by Verizon Wireless at the above referenced project.

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

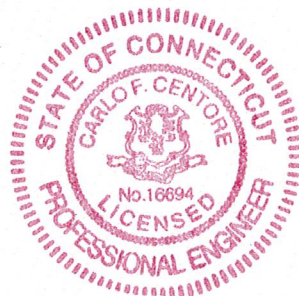
- Review of the FDH structural analysis dated 3/20/2012.
- Field observations by Centek personnel of coax and diplexer installation on 3/26/2013 which determined all coax lines and diplexers were installed in general compliance with the recommendations of the structural analysis report prepared by FDH on 3/20/2012.

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



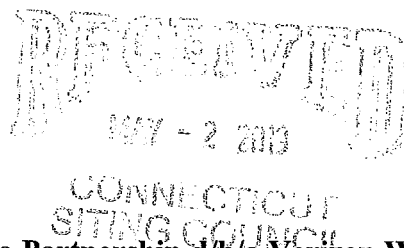
CC: Rachel Mayo, Tim Parks, Jim Smith, Brian Ragozzine

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

April 30, 2013

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



Re: **EM-VER-048-120330 – Cellco Partnership d/b/a Verizon Wireless
101 Burbank Road, Ellington, Connecticut**

Dear Mr. Martin:

On April 17, 2012, the Siting Council acknowledged receipt of Cellco's notice of intent to modify its telecommunications facility at 101 Burbank Road in Ellington. 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 these conditions have 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.

Sincerely,

Kenneth C. Baldwin

Attachment
Copy to:

Sandy M. Carter
Brian Ragozzine
Mark Gauger



Law Offices

BOSTON

PROVIDENCE

HARTFORD

NEW LONDON

STAMFORD

WHITE PLAINS

NEW YORK CITY

ALBANY

SARASOTA

www.rc.com

CEN TEK engineering

Centered on Solutions™

April 3, 2013

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

Re: Existing Telecommunications Facility Tower Modification Certification Letter

Project: Verizon ~ Ellington
101 Burbank Road
Ellington, 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.CO53

Dear Mr. Gauger,

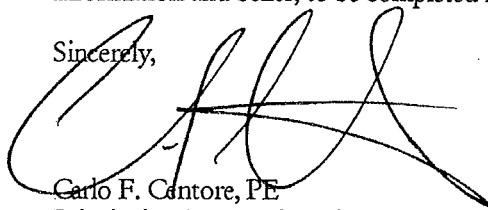
We are providing this "Existing Telecommunications Facility Tower Modification Certification Letter" with regard to the antenna upgrade by Verizon Wireless at the above referenced project.

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

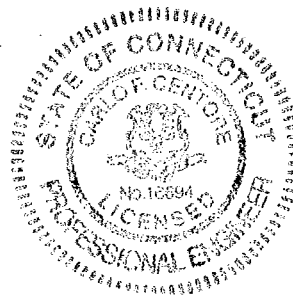
- Review of the FDH structural analysis dated 3/20/2012.
- Field observations by Centek personnel of coax and diplexer installation on 3/26/2013 which determined all coax lines and diplexers were installed in general compliance with the recommendations of the structural analysis report prepared by FDH on 3/20/2012.

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. Cantore, PE
Principal ~ Structural Engineer



CC: Rachel Mayo, Tim Parks, Jim Smith, Brian Ragozzine