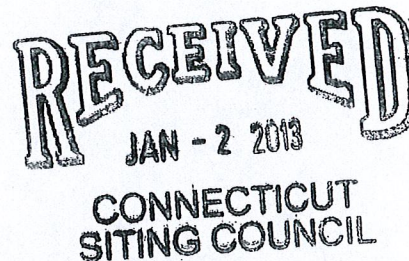


280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

December 28, 2012

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



Re: **EM-VER-082-120829 – 393 Jackson Hill Road, Middlefield, Connecticut**
EM-VER-079-120807 – 175 South Main Street, Marlborough,
Connecticut
EM-VER-005-120217B – 127 New Hartford Road, Barkhamsted,
Connecticut
EM-VER-086-120216 – 41 Beckwith Road, Montville, Connecticut
EM-VER-036-120627 – 15 Pent Road, Deep River, Connecticut
EM-VER-041-120405 – 135 Honey Hill Road, East Haddam, Connecticut

Completion of Construction Activity

Dear Ms. Roberts:

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth C. Baldwin".

Kenneth C. Baldwin

Copy to:
Sandy M. Carter



Law Offices

BOSTON

PROVIDENCE

HARTFORD

NEW LONDON

STAMFORD

WHITE PLAINS

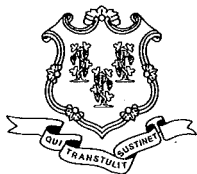
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12012136-v1



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

July 13, 2012

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

RE: **EM-VER-036-120627-** Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 15 Pent Road, Deep River, Connecticut.

Dear Attorney Baldwin:

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

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated June 26, 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.

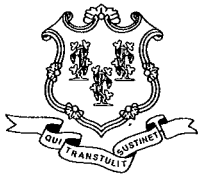
Very truly yours,

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Richard H. Smith, First Selectman, Town of Deep River
Amy Petrone, Zoning Enforcement Officer, Town of Deep River
Julie Kohler, Esq., Cohen and Wolf, P.C.





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

June 28, 2012

The Honorable Richard H. Smith
First Selectman
Town of Deep River
Town Hall
174 Main Street
Deep River, CT 06417

RE: **EM-VER-036-120627**- Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 15 Pent Road, Deep River, Connecticut.

Dear First Selectman Smith:

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

If you have any questions or comments regarding this proposal, please call me or inform the Council by July 13, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Amy Petrone, Zoning Enforcement Officer, Town of Deep River

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

June 26, 2012

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

Re: **Notice of Exempt Modification – Antenna Swap
Pent Road, Deep River, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 170-foot level on an existing 180-foot tower at the above-referenced address. The tower is owned by T-Mobile. Cellco’s use of the tower was approved by the Council in 2004. 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; and three (3) model BXA-70063-6CF LTE antennas, all at the same 170-foot level. Cellco also intends to install six (6) coax cable diplexers to 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 Richard Smith, First Selectman of the Town of Deep River. A copy of this letter is also being sent to Robert Stalsberg, Jr., 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 170-foot level on the existing 180-foot tower.



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Linda Roberts
June 26, 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.

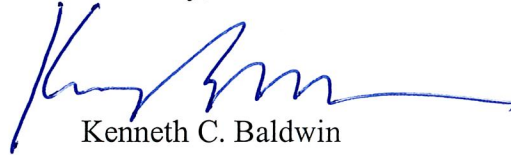
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

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

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

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

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Richard Smith, Deep River First Selectman
Robert Stalsberg, Jr.
Sandy M. Carter



LPA-80080-4CF-EDIN-X

V-Pol | Log Periodic | 80° | 12.5 dBd

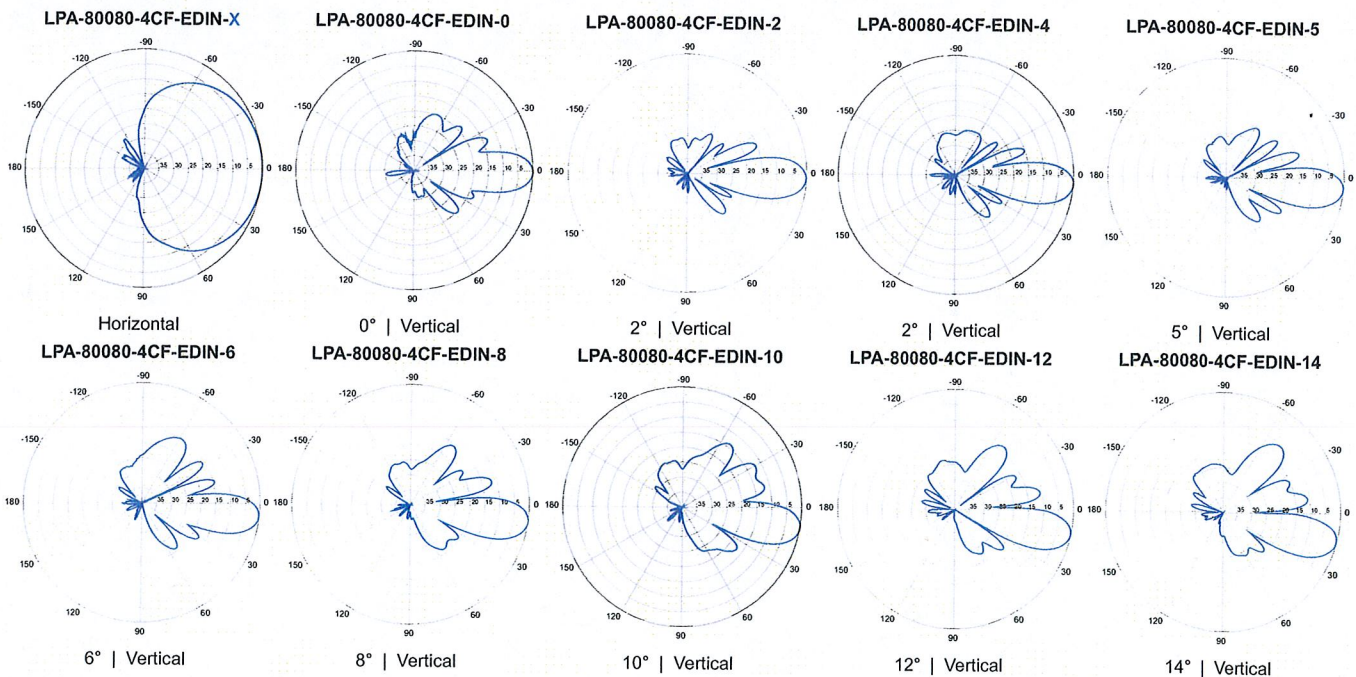
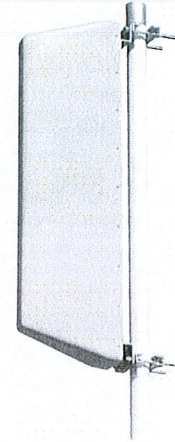
Replace "X" with desired electrical downtilt

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.		



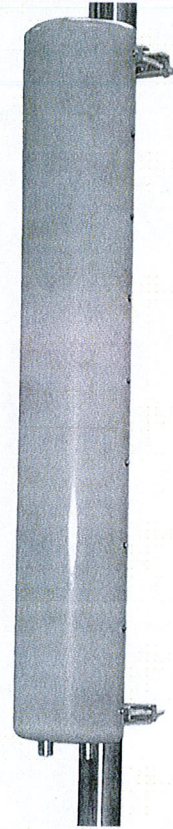
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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

BXA-171085-8BF-EDIN-X

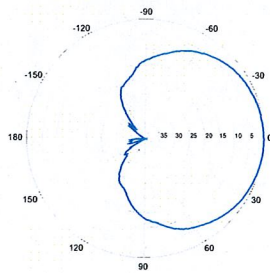
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 85° | 16.4 dBi

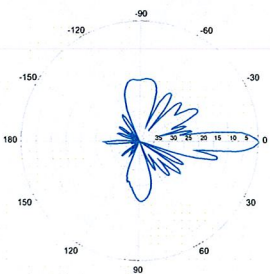
Electrical Characteristics		1710-2170 MHz			
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz		
Polarization	±45°	±45°	±45°		
Horizontal beamwidth	88°	85°	80°		
Vertical beamwidth	7°	7°	7°		
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi		
Electrical downtilt (X)		0, 2, 4	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



BXA-171085-8BF-EDIN-X

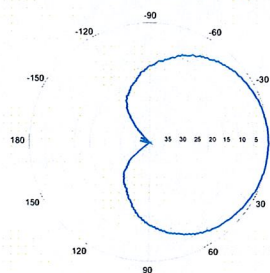


Horizontal | 1710-1880 MHz
BXA-171085-8BF-EDIN-0

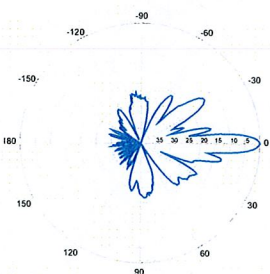


0° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-X

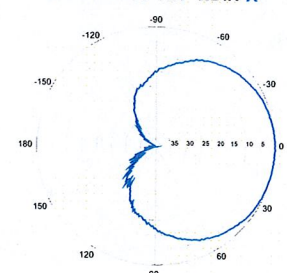


Horizontal | 1850-1990 MHz
BXA-171085-8BF-EDIN-0

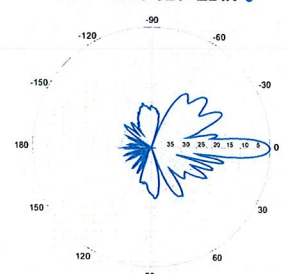


0° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-X



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



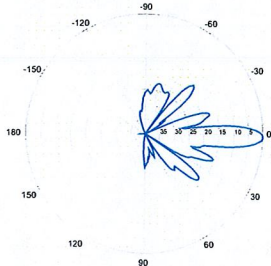
0° | Vertical | 1920-2170 MHz

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-171085-8BF-EDIN-X

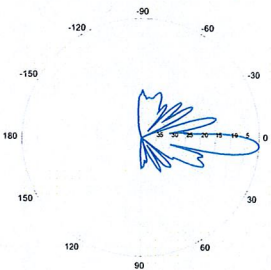
X-Pol | FET Panel | 85° | 16.4 dBi

BXA-171085-8BF-EDIN-2



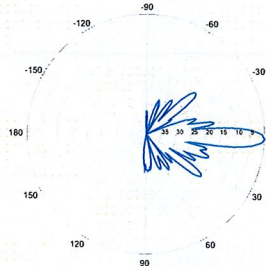
2° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-4



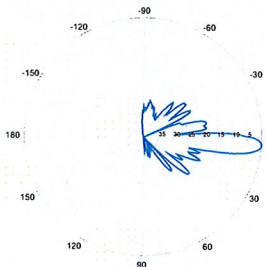
4° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-2



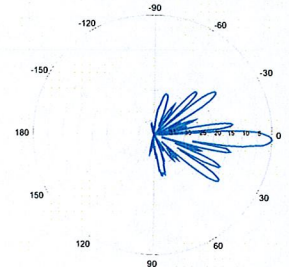
2° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-4



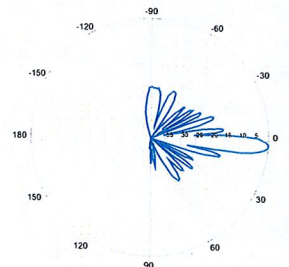
4° | Vertical | 1850-1990 MHz

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-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

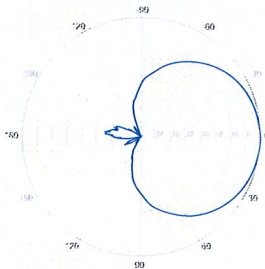
Replace "X" with desired electrical downtilt.

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



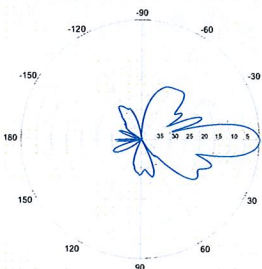
Electrical Characteristics	696-900 MHz		
Frequency bands	696-806 MHz	806-900 MHz	
Polarization	±45°		
Horizontal beamwidth	65°	63°	
Vertical beamwidth	13°	11°	
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10		
Impedance	50Ω		
VSWR	≤1.35:1		
Upper sidelobe 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



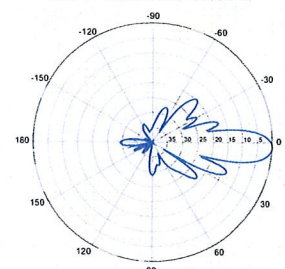
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

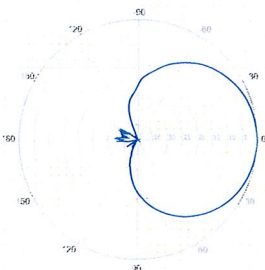


0° | Vertical | 750 MHz

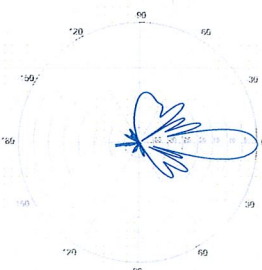
BXA-70063-6CF-EDIN-2



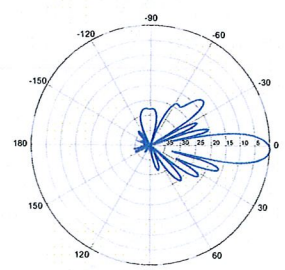
2° | Vertical | 750 MHz



Horizontal | 850 MHz

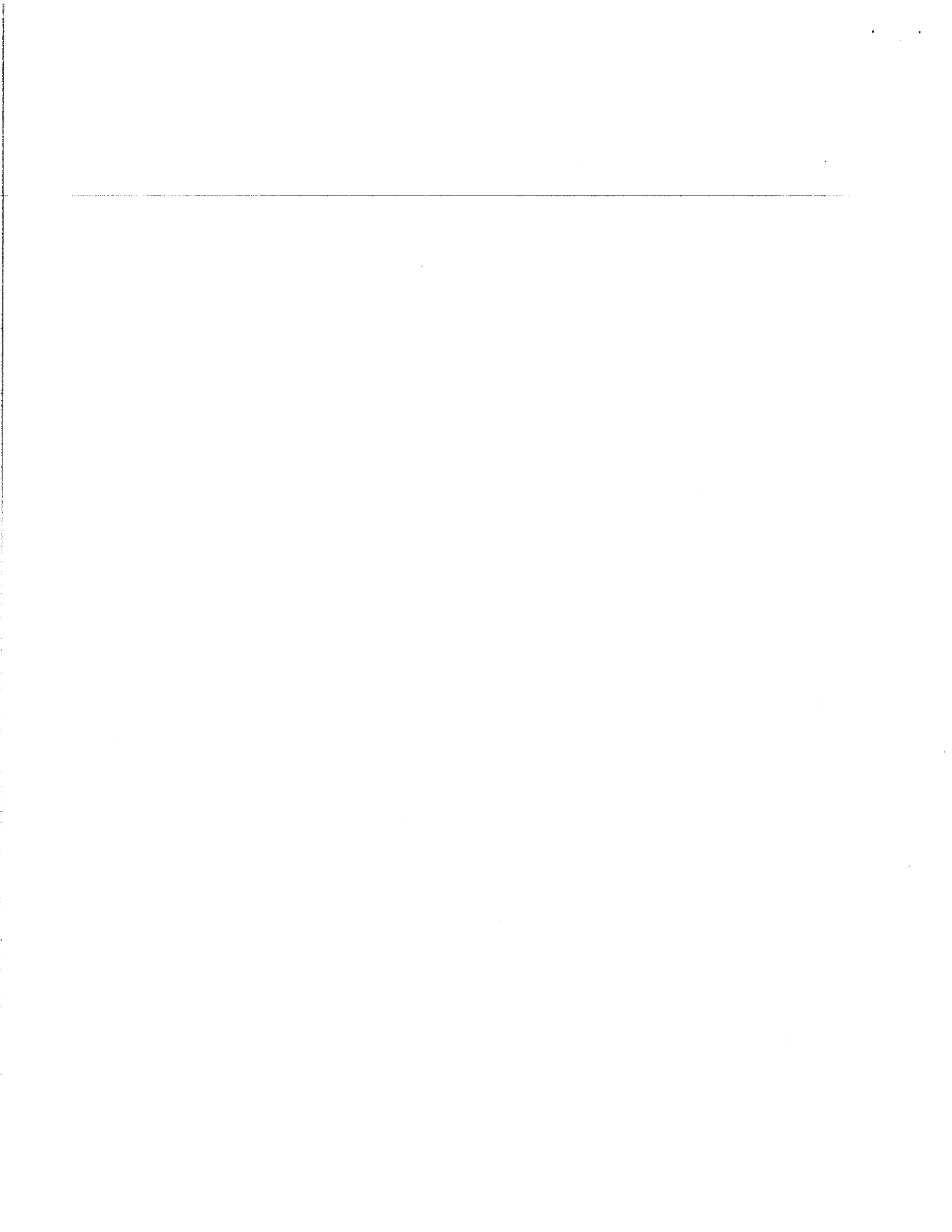


0° | Vertical | 850 MHz



2° | Vertical | 850 MHz

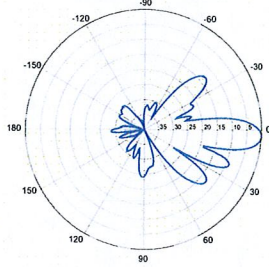
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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



BXA-70063-6CF-EDIN-X

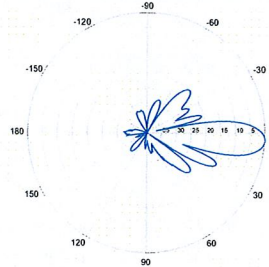
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



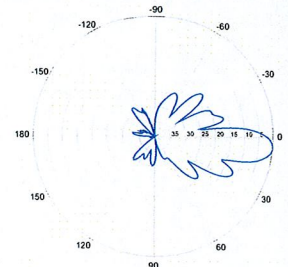
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

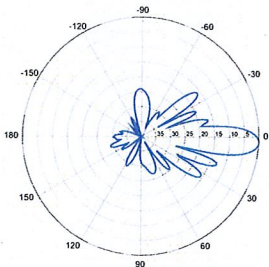


4° | Vertical | 750 MHz

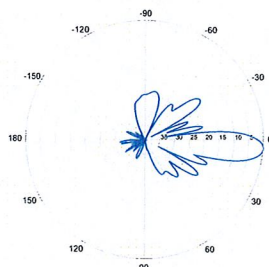
BXA-70063-6CF-EDIN-5



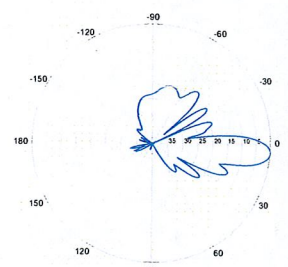
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

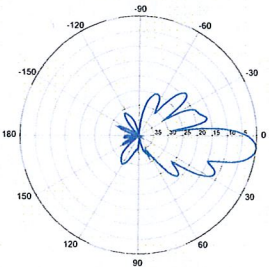


4° | Vertical | 850 MHz



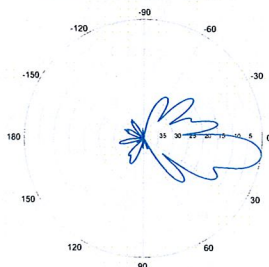
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



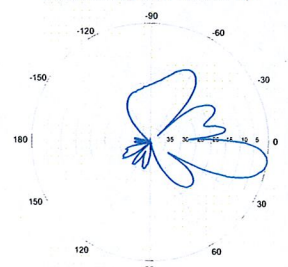
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

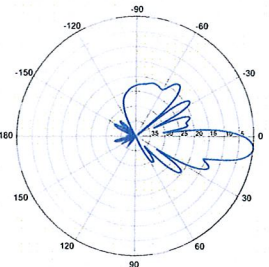


8° | Vertical | 750 MHz

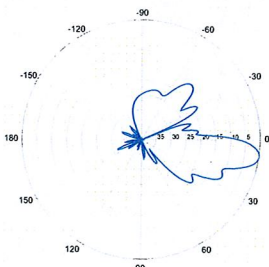
BXA-70063-6CF-EDIN-10



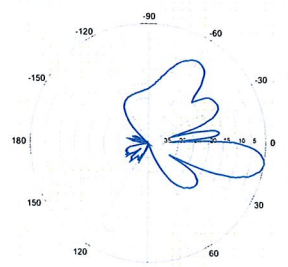
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

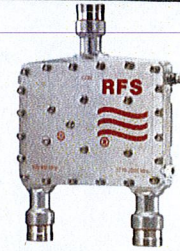
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. 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

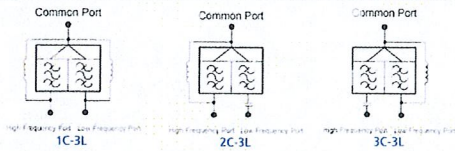


ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

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/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

	General	Power	Density						
Site Name: Deep River									
Tower Height: Verizon @ 170ft									
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total	
*VoiceStream	8	245.7	180	0.0218	1930	1.0000	2.18%		
*AT&T UMTS	1	500	160	0.0070	880	0.5867	1.20%		
*AT&T GSM	2	427	160	0.0120	1900	1.0000	1.20%		
*AT&T GSM	4	296	160	0.0166	880	0.5867	2.83%		
*Pocket	3	631	150	0.0303	2130	1.0000	3.03%		
Verizon PCS	11	233	170	0.0319	1970	1.0000	3.19%		
Verizon Cellular	9	246	170	0.0275	869	0.5793	4.76%		
Verizon AWS	1	680	170	0.0085	2145	1.0000	0.85%		
Verizon 700	1	810	170	0.0101	698	0.4653	2.17%		
								21.39%	
* Source: Siting Council									

STRUCTURAL ANALYSIS REPORT



SITE NUMBER: CT11237C

SITE NAME: DEEP RIVER/RT 9

SITE ADDRESS: 15 PENT ROAD
DEEP RIVER, CT 06417

**NEW ANTENNA INSTALLATION
ON AN EXISTING
178' MONOPOLE**

BY:



CARRIER SITE NAME: DEEP RIVER CT

April 25, 2012

GPD Project #: 2011711.11

MONOPOLE

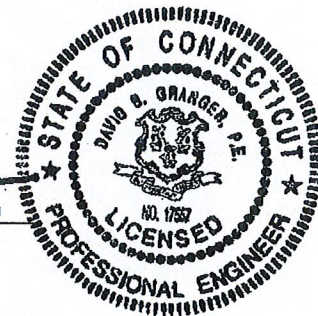
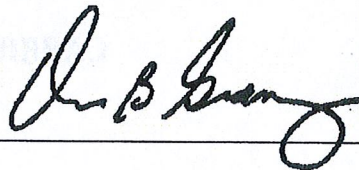
STRUCTURAL ANALYSIS REPORT

CT11237C DEEP RIVER/RT 9
15 Pent Road
Deep River, CT 06417
GPD Project #: 2011711.11

New Antenna Installation
Existing 178 ft Monopole

For:
T-Mobile Towers
Bellevue, Washington

Prepared By:



David B. Granger, P.E.
Registered Professional Engineer
Connecticut #: 17557

April 25, 2012

TABLE OF CONTENTS

DESCRIPTION	PAGE NUMBER
EXECUTIVE SUMMARY	1
TOWER DESCRIPTION	2
TOWER MATERIALS	2
TOWER LOADING	3
ANALYSIS	4
CONCLUSIONS AND RECOMMENDATIONS	4
DISCLAIMER OF WARRANTIES	5

APPENDICES

1. TNX ANALYSIS PRINTOUT
2. TOWER ELEVATION DRAWING AND FEEDLINE PLAN
3. ANCHOR ROD AND BASE PLATE ANALYSIS
4. FOUNDATION ANALYSIS

EXECUTIVE SUMMARY

The purpose of this analysis is to verify whether the existing tower is structurally capable of carrying the new antenna and coax loads as specified by Verizon to T-Mobile Towers. This report was commissioned by Mr. Kenneth Fann of T-Mobile Towers.

The existing structure meets the requirements of TIA/EIA-222-F and the 2005 Connecticut State Building Code for an 85 mph fastest-mile wind speed with 1/2" of radial ice (w/ 25% wind load reduction) for the proposed antenna configuration.

The foundation reactions, with the proposed loading configuration, were found to be less than the existing foundation design. Therefore, the existing foundation is sufficient, assuming it was properly constructed according to original design.

Section Results

<u>Monopole</u>	<u>% Capacity</u>	<u>Result</u>
164.3' – 178'	16.0%	Pass
129.8' – 164.3'	52.9%	Pass
96.1' – 129.8'	60.5%	Pass
63.3' – 96.1'	69.1%	Pass
31.3' – 63.3'	74.2%	Pass
0' – 31.3'	81.3%	Pass
Anchor Rods	72.3%	Pass
Base Plate	74.8%	Pass
<u>Foundation</u>	<u>% Capacity</u>	<u>Result</u>
Bearing	37.7%	Pass
Overturning	73.5%	Pass
Tower Rating:	81.3%	

TOWER DESCRIPTION

The existing 178' monopole is located in Deep River, Connecticut. The tower was originally designed for Voicestream Wireless by PiROD Inc. of Plymouth, Indiana. The original design load for the tower was for an 85 mph basic wind speed with 1/2" radial ice (w/ 25% wind load reduction) in accordance with EIA/TIA-222-F. The tower was originally designed to hold the following:

Original Configuration

Antennas:	
Elev. 180'	(9) 1' x 5' Panel Antennas on a LP Platform, w/ 1-5/8" internal coax
Elev. 170'	(9) 1' x 5' Panel Antennas on a LP Platform, w/ 1-5/8" internal coax
Elev. 160'	(12) 1' x 5' Panel Antennas on a LP Platform, w/ 1-5/8" internal coax
Elev. 150'	(12) 1' x 5' Panel Antennas on a LP Platform, w/ 1-5/8" internal coax
Elev. 140'	(12) 1' x 5' Panel Antennas on a LP Platform, w/ 1-5/8" internal coax

The existing monopole has six major sections connected by slip joints. It has 18 sides and is evenly tapered from 62.9375" (flat-flat) at the base to 22.6400" (flat-flat) at the top. The structure is galvanized and has no tower lighting.

All structural information for this analysis was provided by T-Mobile Towers in the form of the original tower and foundation drawings by PiROD Inc. (Eng. File #: A-117035, dated August 29, 2000). Geotechnical information was provided in the form of a soils report by Dr. Clarence Welti, P.E., P.C., dated May 1, 2000. Additional information was provided in the form of a site inspection report by SiteMaster, dated July 24, 2009 and a previous analysis by Semaan Engineering Solutions, LLC, dated December 11, 2008. Existing, reserved, and proposed antenna information was provided by T-Mobile Towers. This analysis and report are based solely on this information.

TOWER MATERIALS

Data on the steel strength was available from the information provided. The following table details the steel strength used in the analysis.

Monopole	ASTM A572 (65 KSI Yield Strength)
Anchor Rods	ASTM A687 (105 KSI Yield Strength)
Base Plate	ASTM A572 (50 KSI Yield Strength)

TOWER LOADING

The following data shows the major loading that the tower supports. The existing, reserved, and proposed antenna information was provided by T-Mobile Towers.

Existing and Reserevd Configuration

<u>Elevation</u>	<u>Carrier</u>	<u>Antennas</u>
177.5'	T-Mobile	(12) Andrew TMBXX-6516-R2M Antennas, (6) Andrew ETW190VS12UB TMAs & (1) 4' HP MW Dish on a 16.5' LP Platform, w/ (25) 1-5/8" internal coax
170'	Verizon	(12) Decibel DB844H90E-XY Antennas on a 12.5' LP Platform, w/ (12) 1-5/8" internal coax
160'	AT&T	12.5' LP Platform, w/ (12) 1-5/8" internal coax (6) Powerwave 7770 Antennas, (6) Powerwave LGP21401 TMAs & (6) Powerwave 21903 Diplexers on a 12.5' LP Platform, w/ (12) 1-5/8" internal coax
150'	Pocket	(3) Kathrein 742 213 Antennas, flush mounted, w/ (6) 1-5/8" internal coax

Proposed Configuration

<u>Elevation</u>	<u>Carrier</u>	<u>Antennas</u>
177.5'	T-Mobile	(12) Andrew TMBXX-6516-R2M Antennas, (6) Andrew ETW190VS12UB TMAs & (1) 4' HP MW Dish on a 16.5' LP Platform, w/ (25) 1-5/8" internal coax
170'	Verizon	(3) Antel BXA-70063-6CF Antennas, (6) Antel LPA-80080-4CF Antennas, (3) Antel BXA-171085/8BF Antennas & (6) RFS FD9R6004/2C-3L Diplexers on a 12.5' LP Platform, w/ (12) 1-5/8" internal coax
160'	AT&T	(6) Powerwave 7770 Antennas, (6) Powerwave LGP21401 TMAs & (6) Powerwave 21903 Diplexers on a 12.5' LP Platform, w/ (12) 1-5/8" internal coax
150'	Pocket	(3) Kathrein 742 213 Antennas, flush mounted, w/ (6) 1-5/8" internal coax

Notes: - **BOLD** type indicates proposed carrier's final configuration.

- See Appendix 2 for the proposed coax layout.

The purpose of this independent structural analysis review is to determine if the existing tower, with the proposed configuration, is in conformance to the latest TIA/EIA-222-F and the 2005 Connecticut State Building Code standard requirements.

ANALYSIS

The purpose of this structural analysis review is to determine if the existing tower is in conformance to the latest TIA/EIA-222-F standard requirements. TnxTower (Version v6.0.2.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind, and ice load cases. All loads were computed in accordance with the ANSI/TIA/EIA-222-F standard and all local building code requirements. Selected output from the analysis is included in Appendix 1.

The current requirements of TIA/EIA-222-F and the 2005 Connecticut State Building Code are for a fastest-mile wind speed of 85 mph with 1/2" radial ice. A 25% reduction in wind load is allowed when wind and ice are applied simultaneously. TIA/EIA-222-F requires tower within Middlesex County, Connecticut to be analyzed with an 85 mph fastest-mile wind speed at this tower location.

ANALYSIS FASTEST-MILE WIND SPEED:	85 MPH
--	---------------

The tower and foundations are assumed, for the purpose of this analysis, to have been properly fabricated, constructed, maintained, and to be in good condition with no structural defects. This is not a condition assessment of the tower and has been provided without the benefit of recent detailed tower photos, a recent detailed tower mapping, or a recent GPD Group site visit. This analysis assumes all antennas and coax have been installed in a neat and orderly fashion. Proposed antennas are assumed to be installed on standard sized mounts. The existing/proposed mounts are assumed to have been verified by the carrier to support the existing/proposed loading for the required various load cases.

CONCLUSIONS AND RECOMMENDATIONS

Based on the computer structural analysis results, the existing 178' monopole meets the requirements of TIA/EIA-222-F and then 2005 Connecticut State Building Code for an 85 mph fastest-mile wind speed with 1/2" of radial ice (w/ 25% wind load reduction) for the proposed antenna configuration.

The foundation reactions, with the proposed loading configuration, were found to be less than the capacity of the existing foundation design. Therefore, the existing foundation is adequate assuming it was properly constructed according to original design.

Summary of Findings

Monopole	Satisfactory
Anchor Rods	Satisfactory
Base Plate	Satisfactory
Foundation	Satisfactory

Therefore, based on our analysis results, the existing structure is structurally satisfactory for the proposed loading configuration.

DISCLAIMER OF WARRANTIES

GPD GROUP has not performed a recent site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts etc. have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaim any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDICES

1. TNX Analysis Printout
2. Tower Elevation Drawing and Feedline Plan
3. Anchor Rod and Base Plate Analysis
4. Foundation Analysis

TNX ANALYSIS PRINTOUT

tnxTower GPD Group 520 South Main St. Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job CT11237C Deep River/Rt 9	Page 1 of 6
	Project 2011711.11	Date 15:44:25 12/13/11
	Client T-Mobile Towers	Designed by uguduru

Tower Input Data

There is a pole section.

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

The following design criteria apply:

Tower is located in Middlesex County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						No Ice	1/2" Ice	plf
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	177.50 - 8.00	25	No Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	170.00 - 8.00	12	No Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	160.00 - 8.00	12	No Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	150.00 - 8.00	6	No Ice	0.00	0.82
Climbing Pegs	B	No	CaAa (Out Of Face)	178.00 - 8.00	1	No Ice	0.00	0.31
Safety Line 3/8	B	No	CaAa (Out Of Face)	178.00 - 8.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A	C _A A _A	Weight lb
			Horz	Vert			Front	Side	
			ft	ft	°		ft ²	ft ²	
PiROD 16.5' LP Platform	C	None			0.0000	177.50	No Ice	20.80	1800.00
							1/2" Ice	28.10	2066.00
PiROD 12' Lightweight T-Frame (GPD)	C	From Centroid-Le	4.00		0.0000	177.50	No Ice	10.20	253.00
		g	0.00				1/2" Ice	16.20	355.00

tnxTower GPD Group 520 South Main St. Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job		CT11237C Deep River/Rt 9		Page		2 of 6	
	Project		2011711.11		Date		15:44:25 12/13/11	
	Client		T-Mobile Towers		Designed by		uguduru	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
(4) TMBXX-6516-R2M w/ 6' Mount Pipe	A	From	4.00	0.00	0.0000	177.50	No Ice 1/2" Ice	7.08 7.64	5.24 6.12	56.50 109.72
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(4) TMBXX-6516-R2M w/ 6' Mount Pipe	B	From	4.00	0.00	0.0000	177.50	No Ice 1/2" Ice	7.08 7.64	5.24 6.12	56.50 109.72
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(4) TMBXX-6516-R2M w/ 6' Mount Pipe	C	From	4.00	0.00	0.0000	177.50	No Ice 1/2" Ice	7.08 7.64	5.24 6.12	56.50 109.72
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) ETW190VS12UB	A	From	4.00	0.00	0.0000	177.50	No Ice 1/2" Ice	0.66 0.78	0.35 0.44	11.00 15.83
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) ETW190VS12UB	B	From	4.00	0.00	0.0000	177.50	No Ice 1/2" Ice	0.66 0.78	0.35 0.44	11.00 15.83
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) ETW190VS12UB	C	From	4.00	0.00	0.0000	177.50	No Ice 1/2" Ice	0.66 0.78	0.35 0.44	11.00 15.83
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
4" x 4' Mount Pipe	C	From	4.00	0.00	0.0000	177.50	No Ice 1/2" Ice	1.21 1.47	1.21 1.47	36.48 48.11
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
MTS 12.5' LP Platform	C	None			0.0000	170.00	No Ice 1/2" Ice	14.66 18.87	14.66 18.87	1250.00 1481.33
BXA-70063-6CF w/ 72" Mount Pipe	A	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	7.75 8.29	5.58 6.52	38.90 94.85
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
BXA-70063-6CF w/ 72" Mount Pipe	B	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	7.75 8.29	5.58 6.52	38.90 94.85
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
BXA-70063-6CF w/ 72" Mount Pipe	C	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	7.75 8.29	5.58 6.52	38.90 94.85
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) LPA-80080/4CF w/ 6' Mount Pipe	A	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	3.11 3.58	7.48 8.38	33.90 80.49
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) LPA-80080/4CF w/ 6' Mount Pipe	B	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	3.11 3.58	7.48 8.38	33.90 80.49
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) LPA-80080/4CF w/ 6' Mount Pipe	C	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	3.11 3.58	7.48 8.38	33.90 80.49
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
BXA-171085-8BF w/ 2"x48" Mountpipe	A	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	2.94 3.26	3.02 3.57	25.10 52.92
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
BXA-171085-8BF w/ 2"x48" Mountpipe	B	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	2.94 3.26	3.02 3.57	25.10 52.92
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
BXA-171085-8BF w/ 2"x48" Mountpipe	C	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	2.94 3.26	3.02 3.57	25.10 52.92
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) FD9R6004/2C-3L	A	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	0.37 0.45	0.08 0.14	3.10 5.40
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) FD9R6004/2C-3L	B	From	4.00	0.00	0.0000	170.00	No Ice 1/2" Ice	0.37 0.45	0.08 0.14	3.10 5.40
		Centroid-Le	0.00	0.00						
		g	0.00	0.00						
(2) FD9R6004/2C-3L	C	From	4.00	0.00	0.0000	170.00	No Ice	0.37	0.08	3.10

tnxTower GPD Group 520 South Main St. Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job CT11237C Deep River/Rt 9	Page 3 of 6
	Project 2011711.11	Date 15:44:25 12/13/11
	Client T-Mobile Towers	Designed by uguduru

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
		Centroid-Le g	0.00		1/2" Ice	0.45	0.14	5.40
MTS 12.5' LP Platform	C	None	0.00	0.0000	160.00	No Ice 14.66	14.66	1250.00
(2) 7770.00 w/ 6' Mount Pipe	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	1/2" Ice 18.87 No Ice 6.22 1/2" Ice 6.77	18.87 4.35 5.20	1481.33 60.90 106.99
(2) 7770.00 w/ 6' Mount Pipe	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	No Ice 6.22 1/2" Ice 6.77	4.35 5.20	60.90 106.99
(2) 7770.00 w/ 6' Mount Pipe	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	No Ice 6.22 1/2" Ice 6.77	4.35 5.20	60.90 106.99
(2) LGP21401	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	No Ice 1.29 1/2" Ice 1.45	0.23 0.31	14.10 21.26
(2) LGP21401	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	No Ice 1.29 1/2" Ice 1.45	0.23 0.31	14.10 21.26
(2) LGP21401	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	No Ice 1.29 1/2" Ice 1.45	0.23 0.31	14.10 21.26
(2) LGP21903 Diplexer	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	No Ice 0.27 1/2" Ice 0.34	0.18 0.25	11.02 13.44
(2) LGP21903 Diplexer	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	No Ice 0.27 1/2" Ice 0.34	0.18 0.25	11.02 13.44
(2) LGP21903 Diplexer	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	160.00	No Ice 0.27 1/2" Ice 0.34	0.18 0.25	11.02 13.44
Valmont Light Duty Tri-Bracket (1)	C	None		0.0000	150.00	No Ice 1.76 1/2" Ice 2.08	1.76 2.08	54.00 70.00
742 213 w/ Mount Pipe	A	From Leg	0.50 0.00 0.00	0.0000	150.00	No Ice 5.37 1/2" Ice 5.95	4.62 6.00	48.92 90.56
742 213 w/ Mount Pipe	B	From Leg	0.50 0.00 0.00	0.0000	150.00	No Ice 5.37 1/2" Ice 5.95	4.62 6.00	48.92 90.56
742 213 w/ Mount Pipe	C	From Leg	0.50 0.00 0.00	0.0000	150.00	No Ice 5.37 1/2" Ice 5.95	4.62 6.00	48.92 90.56

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				ft ft ft	°	°	ft	ft	ft ²	lb
4' Dish	C	Paraboloid w/Shroud (HP)	From Centroid-Leg	4.00 0.00 0.00	0.0000		177.50	4.00	No Ice 12.57 1/2" Ice 13.10	80.00 90.00

tnxTower GPD Group 520 South Main St. Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job CT11237C Deep River/Rt 9	Page 4 of 6
	Project 2011711.11	Date 15:44:25 12/13/11
	Client T-Mobile Towers	Designed by uguduru

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	178 - 164.333	35.769	29	1.8136	0.0091
L2	167.25 - 129.75	31.714	29	1.7855	0.0067
L3	133.583 - 96.0833	20.061	29	1.4639	0.0031
L4	100.75 - 63.25	11.236	29	1.0814	0.0016
L5	68.75 - 31.25	5.162	29	0.7101	0.0009
L6	37.5 - 0	1.547	29	0.3727	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.50	4' Dish	29	35.579	1.8127	0.0090	21517
170.00	MTS 12.5' LP Platform	29	32.744	1.7953	0.0073	13529
160.00	MTS 12.5' LP Platform	29	29.040	1.7441	0.0054	8003
150.00	Valmont Light Duty Tri-Bracket (1)	29	25.480	1.6541	0.0042	6271

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	178 - 164.333	103.254	4	5.2371	0.0261
L2	167.25 - 129.75	91.542	4	5.1652	0.0190
L3	133.583 - 96.0833	57.916	4	4.2299	0.0087
L4	100.75 - 63.25	32.446	4	3.1242	0.0047
L5	68.75 - 31.25	14.911	4	2.0512	0.0025
L6	37.5 - 0	4.469	4	1.0767	0.0011

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.50	4' Dish	4	102.706	5.2351	0.0257	7835
170.00	MTS 12.5' LP Platform	4	94.517	5.1930	0.0207	4925
160.00	MTS 12.5' LP Platform	4	83.823	5.0429	0.0154	2880
150.00	Valmont Light Duty Tri-Bracket (1)	4	73.548	4.7807	0.0120	2229

tnxTower GPD Group 520 South Main St. Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job CT11237C Deep River/Rt 9	Page 5 of 6
	Project 2011711.11	Date 15:44:25 12/13/11
	Client T-Mobile Towers	Designed by uguduru

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
L1	178 - 164.333 (1)	TP26x22.64x0.25	13.67	0.00	0.0	39.000	19.8636	-4545.84	774681.00	0.006
L2	164.333 - 129.75 (2)	TP34.0625x24.7829x0.3125	37.50	0.00	0.0	39.000	32.5349	-11035.50	1268860.00	0.009
L3	129.75 - 96.0833 (3)	TP41.75x32.4889x0.375	37.50	0.00	0.0	39.000	47.8748	-17928.80	1867120.00	0.010
L4	96.0833 - 63.25 (4)	TP49.0625x39.8475x0.375	37.50	0.00	0.0	39.000	56.3416	-26054.00	2197320.00	0.012
L5	63.25 - 31.25 (5)	TP56.125x46.961x0.375	37.50	0.00	0.0	39.000	64.5385	-35272.20	2517000.00	0.014
L6	31.25 - 0 (6)	TP62.9375x53.8477x0.375	37.50	0.00	0.0	37.124	74.4650	-47316.60	2764410.00	0.017

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x lb-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y lb-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	178 - 164.333 (1)	TP26x22.64x0.25	82231.4 2	8.059	39.000	0.207	0.00	0.000	39.000	0.000
L2	164.333 - 129.75 (2)	TP34.0625x24.7829x0.3125	59459.4 17	27.140	39.000	0.696	0.00	0.000	39.000	0.000
L3	129.75 - 96.0833 (3)	TP41.75x32.4889x0.375	1227383 .33	31.041	39.000	0.796	0.00	0.000	39.000	0.000
L4	96.0833 - 63.25 (4)	TP49.0625x39.8475x0.375	1944375 .00	35.456	39.000	0.909	0.00	0.000	39.000	0.000
L5	63.25 - 31.25 (5)	TP56.125x46.961x0.375	2737983 .33	38.013	39.000	0.975	0.00	0.000	39.000	0.000
L6	31.25 - 0 (6)	TP62.9375x53.8477x0.375	3800400 .00	39.597	37.124	1.067	0.00	0.000	37.124	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V lb	Actual f _v ksi	Allow. F _v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	178 - 164.333 (1)	TP26x22.64x0.25	11166.9 0	0.562	26.000	0.043	2.85	0.000	26.000	0.000
L2	164.333 - 129.75 (2)	TP34.0625x24.7829x0.3125	17717.3 0	0.545	26.000	0.042	13.19	0.000	26.000	0.000
L3	129.75 - 96.0833 (3)	TP41.75x32.4889x0.375	20837.0 0	0.435	26.000	0.033	25.03	0.000	26.000	0.000
L4	96.0833 - 63.25 (4)	TP49.0625x39.8475x0.375	23931.1 0	0.425	26.000	0.033	37.61	0.000	26.000	0.000
L5	63.25 - 31.25 (5)	TP56.125x46.961x0.375	26760.9 0	0.415	26.000	0.032	50.06	0.000	26.000	0.000

tnxTower GPD Group 520 South Main St. Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job CT11237C Deep River/Rt 9	Page 6 of 6
	Project 2011711.11	Date 15:44:25 12/13/11
	Client T-Mobile Towers	Designed by uguduru

Section No.	Elevation ft	Size	Actual V lb	Actual f _v ksi	Allow. F _v ksi	Ratio f _v F _v	Actual T lb-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} F _{vt}
L6	31.25 - 0 (6)	TP62.9375x53.8477x0.375	29873.5 0	0.401	26.000	0.031	61.85	0.000	26.000	0.000

Pole Interaction Design Data

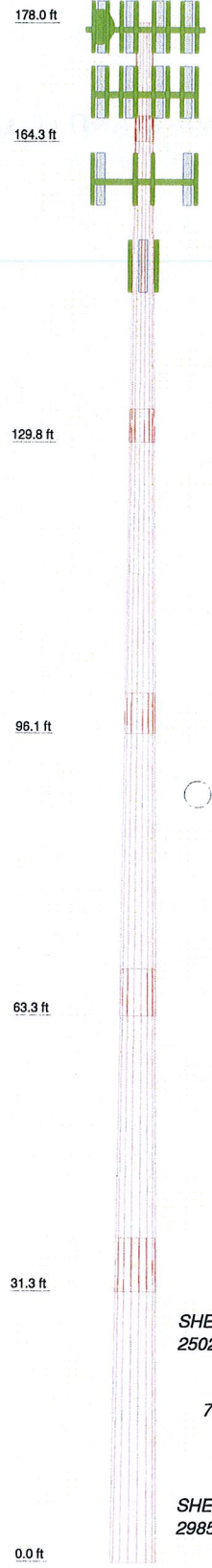
Section No.	Elevation ft	Ratio P P _a	Ratio f _{bx} F _{bx}	Ratio f _{by} F _{by}	Ratio f _v F _v	Ratio f _{vt} F _{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	178 - 164.333 (1)	0.006	0.207	0.000	0.043	0.000	0.213	1.333	H1-3+VT ✓
L2	164.333 - 129.75 (2)	0.009	0.696	0.000	0.042	0.000	0.705	1.333	H1-3+VT ✓
L3	129.75 - 96.0833 (3)	0.010	0.796	0.000	0.033	0.000	0.806	1.333	H1-3+VT ✓
L4	96.0833 - 63.25 (4)	0.012	0.909	0.000	0.033	0.000	0.921	1.333	H1-3+VT ✓
L5	63.25 - 31.25 (5)	0.014	0.975	0.000	0.032	0.000	0.989	1.333	H1-3+VT ✓
L6	31.25 - 0 (6)	0.017	1.067	0.000	0.031	0.000	1.084	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
L1	178 - 164.333	Pole	TP26x22.64x0.25	1	-4545.84	1032649.73	16.0	Pass
L2	164.333 - 129.75	Pole	TP34.0625x24.7829x0.3125	2	-11035.50	1691390.31	52.9	Pass
L3	129.75 - 96.0833	Pole	TP41.75x32.4889x0.375	3	-17928.80	2488870.86	60.5	Pass
L4	96.0833 - 63.25	Pole	TP49.0625x39.8475x0.375	4	-26054.00	2929027.44	69.1	Pass
L5	63.25 - 31.25	Pole	TP56.125x46.961x0.375	5	-35272.20	3355160.86	74.2	Pass
L6	31.25 - 0	Pole	TP62.9375x53.8477x0.375	6	-47316.60	3684958.38	81.3	Pass
Summary								
Pole (L6)							81.3	Pass
RATING =							81.3	Pass

TOWER ELEVATION DRAWING AND FEEDLINE PLAN

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	13.67	18	0.2500	2.92	22.6400	26.0000		888.2
2	37.50	18	0.3125	3.83	24.7829	34.0625		3684.4
3	37.50	18	0.3750	4.67	32.4889	41.7500	A572-65	5580.8
4	37.50	18	0.3750	5.50	39.8475	49.0625		6684.9
5	37.50	18	0.3750	6.25	46.9610	56.1250		7771.5
6	37.50	18	0.3750	53.8477	62.9375			8811.8



DESIGNED APPURTENANCE LOADING

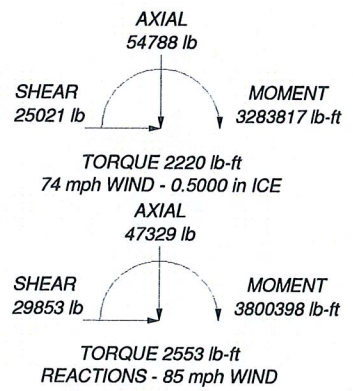
TYPE	ELEVATION	TYPE	ELEVATION
Pirod 16.5' LP Platform	177.5	BXA-171085-8BF w/ 2"x48" Mountpipe	170
PIROD 12' Lightweight T-Frame (GPD)	177.5	BXA-171085-8BF w/ 2"x48" Mountpipe	170
(4) TMBXX-6516-R2M w/ 6' Mount Pipe	177.5	(2) FD9R6004/2C-3L	170
(4) TMBXX-6516-R2M w/ 6' Mount Pipe	177.5	(2) FD9R6004/2C-3L	170
(4) TMBXX-6516-R2M w/ 6' Mount Pipe	177.5	(2) FD9R6004/2C-3L	170
(2) ETW190VS12UB	177.5	MTS 12.5' LP Platform	170
(2) ETW190VS12UB	177.5	(2) 7770.00 w/ 6' Mount Pipe	160
(2) ETW190VS12UB	177.5	(2) 7770.00 w/ 6' Mount Pipe	160
4" x 4" Mount Pipe	177.5	(2) 7770.00 w/ 6' Mount Pipe	160
4' Dish	177.5	(2) LGP21401	160
BXA-70063-6CF w/ 72" Mount Pipe	170	(2) LGP21401	160
BXA-70063-6CF w/ 72" Mount Pipe	170	(2) LGP21903 Diplexer	160
BXA-70063-6CF w/ 72" Mount Pipe	170	(2) LGP21903 Diplexer	160
(2) LPA-80080/4CF w/ 6' Mount Pipe	170	(2) LGP21903 Diplexer	160
(2) LPA-80080/4CF w/ 6' Mount Pipe	170	MTS 12.5' LP Platform	160
(2) LPA-80080/4CF w/ 6' Mount Pipe	170	742 213 w/ Mount Pipe	150
(2) LPA-80080/4CF w/ 6' Mount Pipe	170	742 213 w/ Mount Pipe	150
BXA-171085-8BF w/ 2"x48" Mountpipe	170	742 213 w/ Mount Pipe	150
		Valmont Light Duty Tri-Bracket (1)	150


MATERIAL STRENGTH

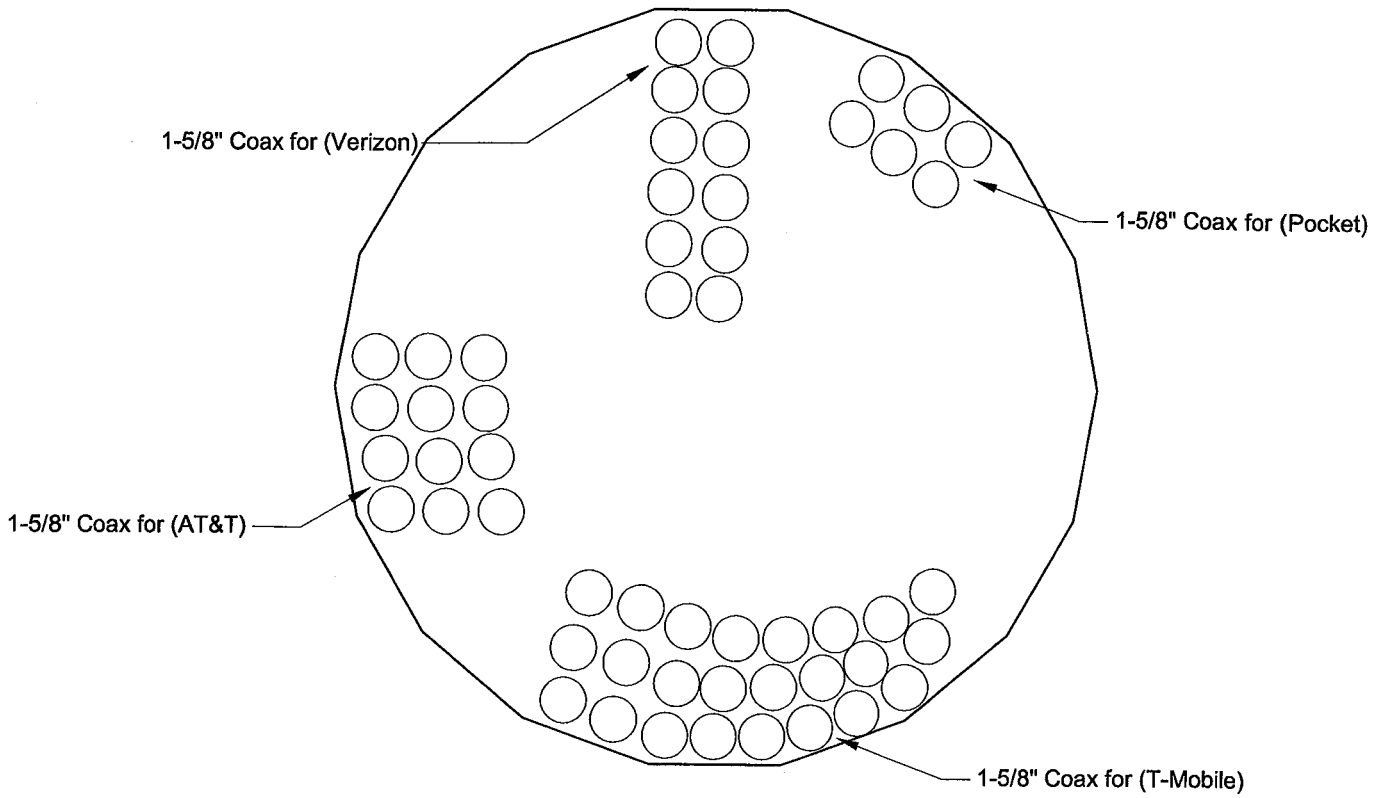
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 81.3%

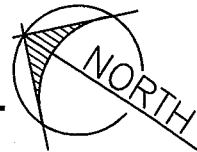


 GPD Group 520 South Main St. Akron, OH 44311 Consulting Engineers Phone: (330) 572-2100 FAX: (330) 572-2101	Job: CT11237C Deep River/Rt 9		
	Project: 2011711.11		
	Client: T-Mobile Towers	Drawn by: uguduru	App'd:
	Code: TIA/EIA-222-F	Date: 12/13/11	Scale: NTS
	Path: N:\2011\201171111\11RISA\CT11237C.eit	Dwg No. E-1	



FEEDLINE PLAN

NOT TO SCALE



ANCHOR ROD AND BASE PLATE ANALYSIS



Anchor Rod and Base Plate Stresses
CT11237C DEEP RIVER/RT 9
 2011711.11

Overturning Moment =	3800.40	k*ft
Axial Force =	47.33	k
Shear Force =	29.85	k

Acceptable Stress Ratio	
=	105.0%

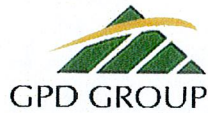
Anchor Rods		
Number of Rods =	45	
Type =	Bolt	
Rod Ultimate Strength (Fu) =	150	ksi
ASIF =	1.333	
Rod Circle =	68	in
Rod Diameter =	1.25	in
Area =	1.23	in ²
Max Tension on Rod =	58.55	kips
Max Compression on Rod =	60.66	kips
Allow. Rod Force =	80.99	kips
Anchor Rod Capacity =	72.3%	OK

Base Plate		
Location =	External	
Plate Strength (F _y) =	50	ksi
Outside Diameter =	71	in
Plate Thickness =	1.375	in
b =	4.00	in
Le =	4.00	in
fb =	37.41	ksi
Fb =	50	ksi
BP Capacity =	74.8%	OK

Stiffeners		
Configuration =	Every Rod	
Thickness =	0.75	in
Width =	4	in
Notch =	0.5	in
Height =	12	in
Stiffener Strength (F _y) =	50	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	39.46	kips
Vert. Weld Capacity =	Not Verified	kips
Horiz. Weld Capacity =	Not Verified	kips
Stiffener Capacity =	41.7%	kips
Controlling Capacity =	41.7%	OK

Pole		
Pole Diameter =	62.9375	in
Number of Sides =	18	
Thickness =	0.375	in
Pole Yield Strength =	65	ksi

FOUNDATION ANALYSIS



Mat Foundation Analysis
CT11237C DEEP RIVER/RT 9
2011711.11

General Info	
Code	TIA/EIA-222-F (ASD)
Bearing On	Rock
Foundation Type	Mono Pad
Pier Type	None
Reinforcing Known	Yes
Max Capacity	1.05

Tower Reactions	
Moment, M	3800.398 k-ft
Axial, P	47,329 k
Shear, V	29.853 k

Pad & Pier Geometry		
Pier N/A	0	ft
Pad Length, L	29	ft
Pad Width, W	29	ft
Pad Thickness, t	3.5	ft
Depth, D	3.5	ft
Height Above Grade, HG	0.5	ft

Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete Fc'	4	ksi
Clear Cover	3	in
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 8	
Pad Quantity Per Layer	32	
Pier Rebar Size	# 8	
Pier Quantity of Rebar		

Soil Properties		
Soil Type	Cohesive	
Soil Unit Weight	120	pcf
Cohesion, Cu	0	ksf
Bearing Type	Gross	
Ultimate Bearing	12	ksf
Water Table Depth	Below	ft
Frost Depth	3.333	ft

Bearing Summary			Load Case
Qxmax	1.71	ksf	1D+1W
Qymax	1.71	ksf	1D+1W
Qmax @ 45°	2.26	ksf	1D+1W
Q _{(all) Gross}	6.00	ksf	
Controlling Capacity	37.7%	Pass	

Overturning Summary (Required FS=1.5)			Load Case
FS(ot)x	2.04	≥1.5	1D+1W
FS(ot)y	2.04	≥1.5	1D+1W
Controlling Capacity	73.5%	Pass	

