

July 24, 2014

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification
37 Carmen Hill Road, Brookfield, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains nine (9) wireless telecommunications antennas at the 70-foot and 79-foot levels on the existing 80-foot tower at 37 Carmen Hill Road in Brookfield, Connecticut (the “Property”). The tower and Property are owned by Florida Tower Partners. The Council approved Cellco’s use of this tower in 1995. Cellco now intends to modify its facility by replacing three (3) of existing antennas with three (3) model BXA-171063-8BF, 1900 MHz antennas and adding three (3) model BXA-171063-12CF, 2100 MHz antennas, for a total of twelve (12) antennas, all at the 79-foot level on the tower. Cellco also intends to install three (3) remote radio heads (“RRHs”) behind its 2100 MHz antennas and one (1) HYBRIFLEX™ antenna cable. Included in Attachment 1 are specifications for Cellco’s replacement antennas, RRHs and HYBRIFLEX™ cable.

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 William N. Tinsley, First Selectman for the Town of Brookfield.

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

Robinson+Cole

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1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's new and replacement antennas and RRHs will be installed at the 79-foot level of the existing 80-foot tower.

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

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

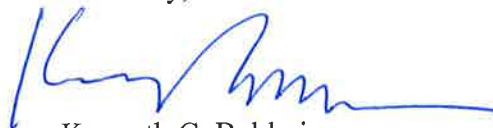
4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A General Power Density table for Cellco's modified facility is included in Attachment 2.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation can support Cellco's proposed modifications. (See Structural Analysis Report included in Attachment 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:

William N. Tinsley, Brookfield First Selectman

Sandy M. Carter

ATTACHMENT 1

BXA-171063-8BF-EDIN-X

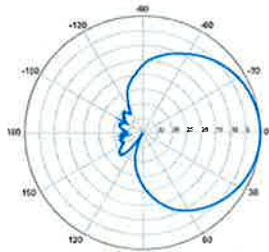
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 63° | 17.4 dBi

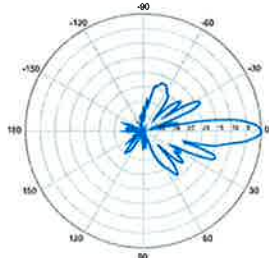
Electrical Characteristics	1710-2170 MHz			
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz	
Polarization	±45°	±45°	±45°	
Horizontal beamwidth	68°	65°	60°	
Vertical beamwidth	7°	7°	7°	
Gain	14,5 dBd / 16,6 dBi	14,9 dBd / 17,0 dBi	15,3 dBd / 17,4 dBi	
Electrical downtilt (X)	0, 2, 4, 6, 8			
Impedance	50Ω			
VSWR	≤1.5:1			
First upper sidelobe	< -17 dB			
Front-to-back ratio	> 30 dB			
In-band isolation	< -25 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	1225 x 154 x 105 mm	48.2 x 6.1 x 4.1 in		
Depth with t-brackets	133 mm	5.2 in		
Weight without mounting brackets	4.2 kg	9.2 lbs		
Survival wind speed	296 km/hr	184 mph		
Wind area	Front: 0,19 m ² Side: 0,14 m ²	Front: 2,0 ft ²	Side: 1,5 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf	Side: 50 lbf	
Mounting Options	Part Number	Fits Pipe Diameter		Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm	2,0-4,0 in	2,3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm	2,0-4,0 in	3,6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-8BF-EDIN-X-FP			



BXA-171063-8BF-EDIN-X

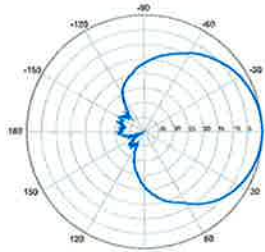


Horizontal | 1710-1880 MHz
BXA-171063-8BF-EDIN-0

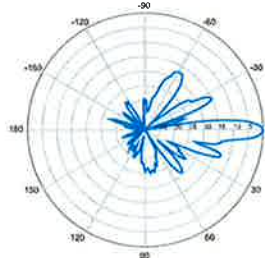


0° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-X

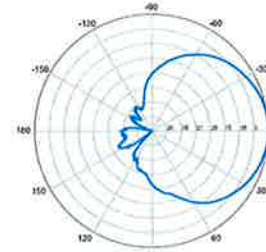


Horizontal | 1850-1990 MHz
BXA-171063-8BF-EDIN-0

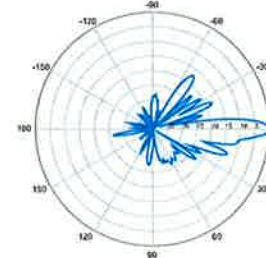


0° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-X



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



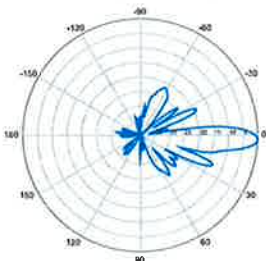
0° | Vertical | 1920-2170 MHz

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

BXA-171063-8BF-EDIN-X

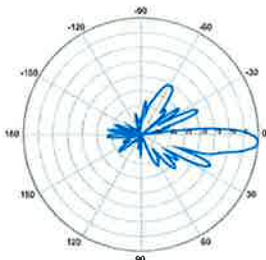
X-Pol | FET Panel | 63° | 17.4 dBi

BXA-171063-8BF-EDIN-2



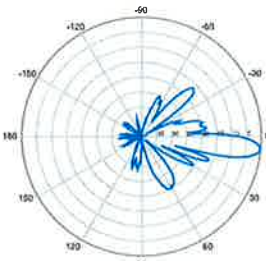
2° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-4



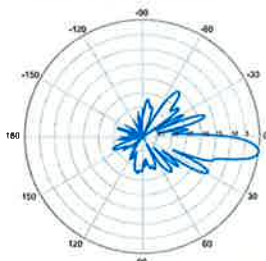
4° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-6



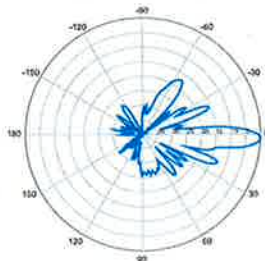
6° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-8



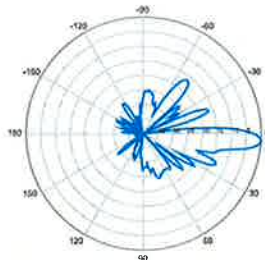
8° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-2



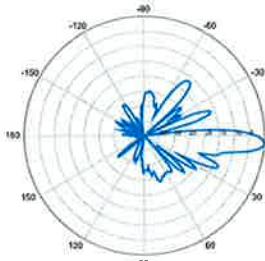
2° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-4



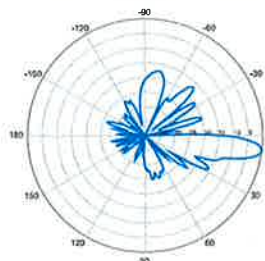
4° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-6



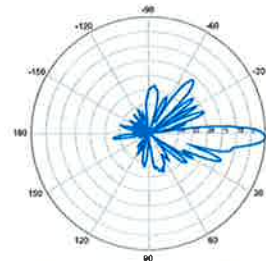
6° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-8



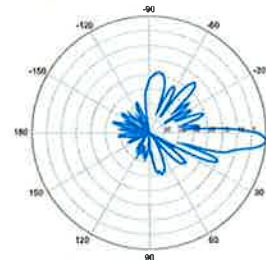
8° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-2



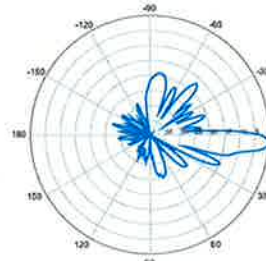
2° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-4



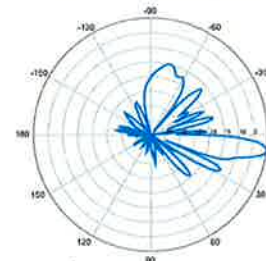
4° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-6



6° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-8



8° | Vertical | 1920-2170 MHz

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BXA-171063-12CF-EDIN-X

X-Pol | FET Panel | 63° | 19.0 dBi

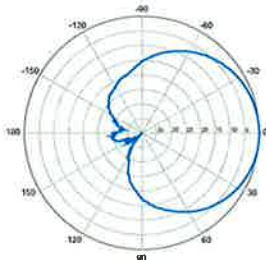
Replace "X" with desired electrical downtilt.

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

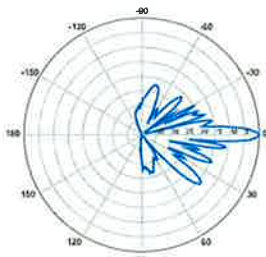
Electrical Characteristics		1710-2170 MHz			
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz		
Polarization	±45°	±45°	±45°		
Horizontal beamwidth	68°	65°	60°		
Vertical beamwidth	4.5°	4.5°	4.5°		
Gain	16,1 dBd / 18,2 dBi	16,5 dBd / 18,6 dBi	16,9 dBd / 19,0 dBi		
Electrical downtilt (X)	0, 2, 5				
Impedance	50Ω				
VSWR	≤1.5:1				
First upper sidelobe	< -17 dB				
Front-to-back ratio	> 30 dB				
In-band isolation	< -25 dB				
IM3 (20W carrier)	< -150 dBc				
Input power	300 W				
Lightning protection	Direct Ground				
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)				
Operating temperature	-40° to +60° C / -40° to +140° F				
Mechanical Characteristics					
Dimensions Length x Width x Depth	1842 x 154 x 105 mm	72.5 x 6.1 x 4.1 in			
Depth with z-brackets	133 mm	5.2 in			
Weight without mounting brackets	5.8 kg	12.8 lbs			
Survival wind speed	> 201 km/hr		> 125 mph		
Wind area	Front: 0,28 m ² Side: 0,19 m ²	Front: 3,1 ft ² Side: 2,1 ft ²			
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf			
Mounting Options		Part Number	Fits Pipe Diameter	Weight	
2-Point Mounting Bracket Kit	26799997	50-102 mm	2.0-4.0 in	2.3 kg	5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm	2.0-4.0 in	3.6 kg	8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-12CF-EDIN-X-FP				



BXA-171063-12CF-EDIN-X

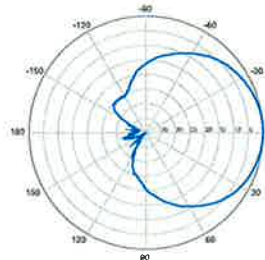


Horizontal | 1710-1880 MHz
BXA-171063-12CF-EDIN-0

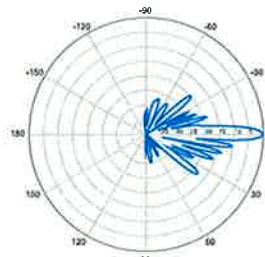


0° | Vertical | 1710-1880 MHz

BXA-171063-12CF-EDIN-X

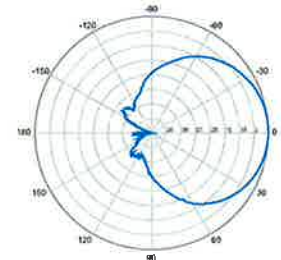


Horizontal | 1850-1990 MHz
BXA-171063-12CF-EDIN-0

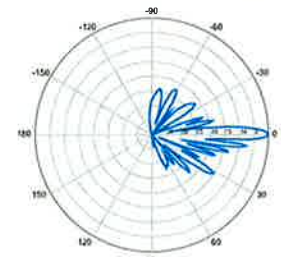


0° | Vertical | 1850-1990 MHz

BXA-171063-12CF-EDIN-X



Horizontal | 1920-2170 MHz
BXA-171063-12CF-EDIN-0



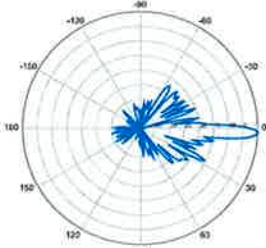
0° | Vertical | 1920-2170 MHz

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BXA-171063-12CF-EDIN-X

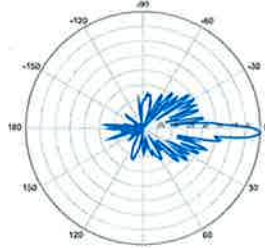
X-Pol | FET Panel | 63° | 19.0 dBi

BXA-171063-12CF-EDIN-2



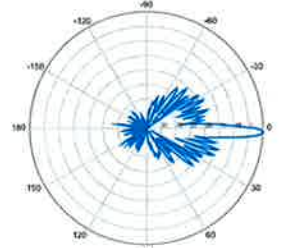
2° | Vertical | 1710-1880 MHz

BXA-171063-12CF-EDIN-2



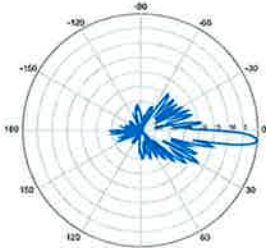
2° | Vertical | 1850-1990 MHz

BXA-171063-12CF-EDIN-2



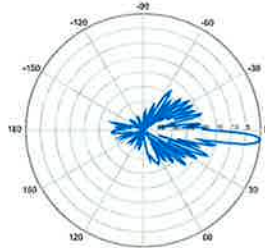
2° | Vertical | 1920-2170 MHz

BXA-171063-12CF-EDIN-5



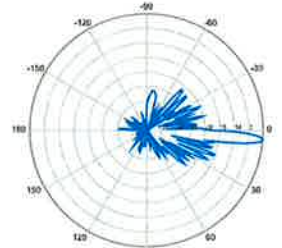
5° | Vertical | 1710-1880 MHz

BXA-171063-12CF-EDIN-5



5° | Vertical | 1850-1990 MHz

BXA-171063-12CF-EDIN-5



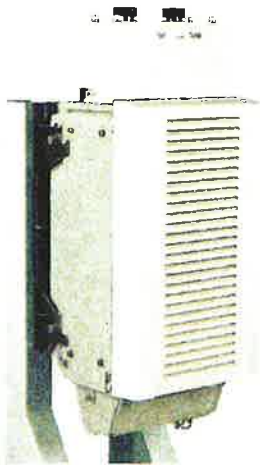
5° | Vertical | 1920-2170 MHz

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Alcatel-Lucent RRH2x40-AWS

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-AWS is a high-power, small form-factor Remote Radio Head (RRH) operating in the AWS frequency band (1700/2100MHz - 3GPP Band 4). The Alcatel-Lucent RRH2x40-AWS is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.



A distributed eNodeB expands deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of an eNodeB to be installed separately, within the same site or several kilometres apart.

The Alcatel-Lucent RRH2x40-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information. The Alcatel-Lucent RRH2x40-AWS has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to four-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 20 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-AWS is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low

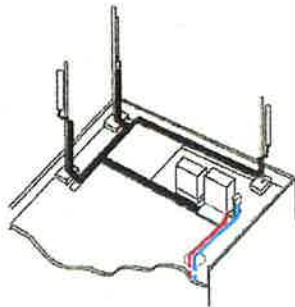
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-AWS is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-AWS is compact and weighs less than 20 kg (44 lb), eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day — a fraction of the time required for a traditional BTS.

Excellent RF performance

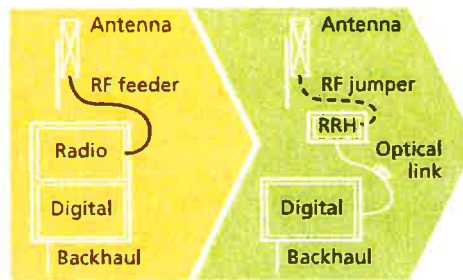
Because of its small size and weight, the Alcatel-Lucent RRH2x40-AWS can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-AWS where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2x40-AWS provides more RF power while at the same time consuming less electricity.



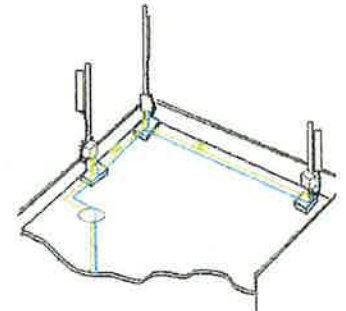
Macro

Features

- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless)
- Noise-free
- Best-in-class power efficiency, with significantly reduced energy consumption



RRH for space-constrained cell sites



Distributed

Benefits

- Leverages existing real estate with lower site costs
- Reduces installation costs, with fewer installation materials and simplified logistics
- Decreases power costs and minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility to network planning

Technical specifications

Physical dimensions

- Height: 620 mm (24.4 in.)
- Width: 270 mm (10.63 in.)
- Depth: 170 mm (6.7 in.)
- Weight (without mounting kit): less than 20 kg (44 lb)

Power

- Power supply: -48VDC

Operating environment

- Outdoor temperature range:
 - With solar load: -40°C to +50°C (-40°F to +122°F)
 - Without solar load: -40°C to +55°C (-40°F to +131°F)

- Passive convection cooling (no fans)
- Enclosure protection
 - IP65 (International Protection rating)

RF characteristics

- Frequency band: 1700/2100 MHz (AWS); 3GPP Band 4
- Bandwidth: up to 20 MHz
- RF output power at antenna port: 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way with optional Rx Diversity module
- Noise figure: below 2.0 dB typical
- Antenna Line Device features
 - TMA and Remote electrical tilt (RET) support via AISG v2.0

Optical characteristics

Type/number of fibers

- Single-mode variant
 - One Single Mode Single Fiber per RRH2x, carrying UL and DL using CWDM
 - Single mode dual fiber (SM/DF)
- Multi-mode variant
 - Two Multi-mode fibers per RRH2x: one carrying UL, the other carrying DL

Optical fiber length

- Up to 500 m (0.31 mi), using MM fiber
- Up to 20 km (12.43 mi), using SM fiber

Digital Ports and Alarms

- Two optical ports to support daisy-chaining
- Six external alarms

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HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics - minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding - eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design - Decreases tower loading
- Robust cabling - Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH - Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable - Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket - Ensures long-lasting cable protection

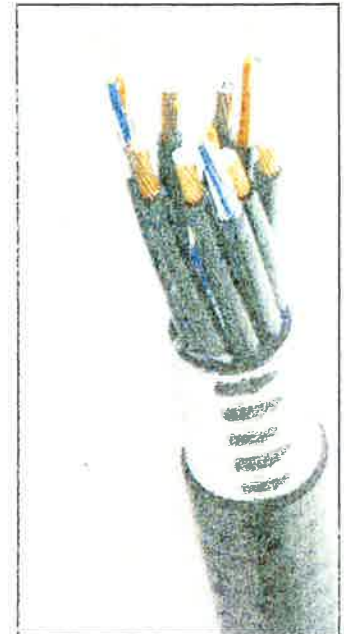


Figure 1: HYBRIFLEX Series

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	(mm (in))	46.5 (1.83)
Jacket	Polyethylene, PE	(mm (in))	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes

Weight, Approximate		(kg/m (lb/ft))	1.9 (1.30)
Minimum Bending Radius, Single Bending		(mm (in))	200 (8)
Minimum Bending Radius, Repeated Bending		(mm (in))	500 (20)
Recommended/Maximum Clamp Spacing		(m (ft))	1.0 / 1.2 (3.25 / 4.0)

DC-Resistance Outer Conductor Armor		(Ω/km (Ω/1000ft))	0.68 (0.205)
DC-Resistance Power Cable, 8.4mm² (8AWG)		(Ω/km (Ω/1000ft))	2.1 (0.307)

Version	Single-mode OM3		
Quantity, Fiber Count	16 (8 pairs)		
Core/Clad	(μm)	50/125	
Primary Coating (Acrylate)	(μm)	245	
Buffer Diameter, Nominal	(μm)	900	
Secondary Protection, Jacket, Nominal	(mm (in))	2.0 (0.08)	
Minimum Bending Radius	(mm (in))	104 (4.1)	
Insertion Loss @ wavelength 850nm	dB/km	3.0	
Insertion Loss @ wavelength 1310nm	dB/km	1.0	
Standards (Meets or exceeds)	UL34-V0 UL1666 RoHS Compliant		

Size (Power)	(mm (AWG))	8.4 (8)
Quantity, Wire Count (Power)		16 (8 pairs)
Size (Alarm)	(mm (AWG))	0.8 (18)
Quantity, Wire Count (Alarm)		4 (2 pairs)
Type		UV protected
Strands		19
Primary Jacket Diameter, Nominal	(mm (in))	6.8 (0.27)
Standards (Meets or exceeds)		NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant

Installation Temperature	(°C (°F))	-40 to +65 (-40 to 149)
Operation Temperature	(°C (°F))	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

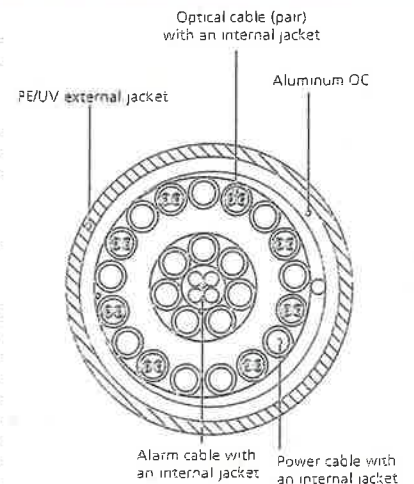


Figure 2: Construction Detail

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

ATTACHMENT 2

General Power Density

Site Name: BROOKFIELD, CT
 Cumulative Power Density

Operator	Operating Frequency (MHz)	Number of Trans.	ERP Per Trans. (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm ²)	Maximum Permissible Exposure* (mW/cm ²)	Fraction of MPE (%)
VZW PCS	1970	15	342	5130	80	0.2883	1.0	28.83%
VZW Cellular	869	9	429	3861	80	0.2170	0.5793333333	37.45%
VZW AWS	2145	1	1750	1750	80	0.0983	1.0	9.83%
VZW 700	698	1	880	880	80	0.0494	0.4653333333	10.63%

Total Percentage of Maximum Permissible Exposure

86.73%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz

mW/cm² = milliwatts per square centimeter

ERP = Effective Radiated Power

Absolute worst case maximum values used.

ATTACHMENT 3



8613 ORCHARD HILL DR, PLANO, TX 75025, EMAIL: SHRADDHA@AWSENGR.COM, PHONE: 614-260-1731

STRUCTURAL ANALYSIS REPORT

80' SELF SUPPORT TOWER

SITE NAME: BROOKFIELD

SITE NUMBER: CT1191

**SITE ADDRESS: 37 CARMEN HILL ROAD,
BROOKFIELD, CT**

Prepared For:



Florida Tower Partners

DATE: 6/27/2014

AWS JOB# 0814-009

INTRODUCTION

AWS Consulting Engineers, LLC has completed the structural analysis of the 80' Self-support tower in Brookfield, CT for the proposed antenna configuration as shown in the tables below.

Tower Type	Self-Support Tower
Tower Configuration	Rohn 80 SST
Previous Structural Analysis	Semaan Engineering Solutions, LLC dated
Prior Modification	N/A
Tower and Foundation Manufacturer Drawings	Not available
Geotechnical Report	Not available
Tower Mapping	High Tower Solutions Inc. dated 2/21/2008
Antenna Inventory	Engineered Tower Solutions, PLLC dated 2/24/2014

MATERIAL GRADE USED IN THE ANALYSIS:

Based on the information provided to us the material strength for each of the elements was considered as below:

Legs	50 ksi
Diagonals	36 ksi
Horizontals	36 ksi

ANALYSIS CRITERIA

Our structural analysis of this tower was completed using the TNX Tower 6 software program to create three-dimensional, non-linear model of the tower which takes into account second order geometric effects due to displacements and calculates stresses for various load combinations.

We based our analysis on the requirements of "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", EIA/TIA-222-F for a basic design wind velocity as noted below.

Design Code	EIA/TIA-222-F
Location (County, State)	Fairfield County
Basic wind Speed w/out ice	85 mph w/o ice
Basic wind Speed w/ 0.5" ice	74 mph/ ice

ANTENNA CONFIGURATION

The analysis is based upon the proposed and existing appurtenances as shown in the table below.

FINAL TOWER LOADING

CARRIER	RAD CENTER	NO.	APPURTUNANCE	MOUNT	COAX
AT&T	78'-75'	2	Allgon 7125.16.05	Side Arms with Stabilizers	(4) 7/8"
		2	Remec TMA's		
		1	5' Panel		
VERIZON	70'	2	BXA-70063/6CF	Side Sector Frames	(12) 1-5/8" (1) Hybrid cable
		2	BXA 80063/6CF		
	79'	3	BXA171063/8BF		
	70'	1	BXA 80063/4CF		
		1	BXA 70063/4CF		
	79'	3	BXA 171063/12CF		
	70'	6	RFS FD9R6004/2C-3L		
		3	ALU RRHCX40 AWS		
		1	RFS DB-T1-6Z-8AB-OZ		

RESULTS

The tower does have the capacity to support the additional antennas, mount and coax loads as per the minimum code requirements. The following table shows a summary of the member capacity:

Elevation (ft)	Component Type	Percent Stress (%)	Pass/Fail
20 - 0	Leg	97	Pass
20 - 0	Diagonal	70.3	Pass
60 - 40	Top Girt	7.9	Pass

Foundation

The computed maximum tower reactions are as follows:

Base reactions (per leg)	Proposed Design Reactions
Compression (k)	53
Uplift (k)	48
Shear (k)	5

The foundation design and geotech report were not available to us and hence was not investigated at this time.

CONCLUSION

The analysis of the existing tower indicates that it is **structurally adequate** and in compliance with the code requirements mentioned above for the propose loading.

If you have any questions or concerns regarding this analysis, please give us a call.

Sincerely,

Shraddha Dharia, P.E.
CT P.E. # PEN0028187
Expires: 1/31/2015



6.27.2014

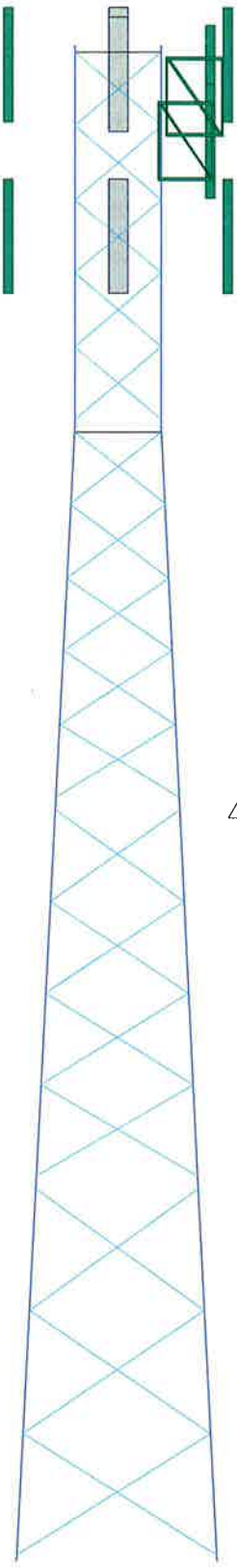
Standard Conditions and Assumptions

This analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. The analysis is based solely on the information supplied, and the results, in turn, are only as accurate as data extracted from this information. We were provided with the tower and loading information and assume the information supplied is accurate. AWS Consulting Engineers, LLC has made no independent determination of its accuracy. The following assumptions were made for this structural analysis:

1. No allowance was made for any damaged, missing, or rusted members. The existing tower is assumed to have been properly maintained in accordance with the TIA/EIA Standard and/or its original manufacturer's recommendations. The existing tower is assumed to be in good condition with no structural defects and with no deterioration to its member capacities. The tower member sizes and geometry are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and stated in the materials section.
2. The structural analysis by AWS Consulting Engineers, Inc. verifies the adequacy of the main structural members of the tower. AWS Consulting Engineers, Inc. provides a limited scope of service in that we cannot verify the adequacy of every structural sub-component, mounting frame, bolt, weld, plate connection, etc. All bolts, welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
3. All prior structural modifications, if any, are assumed to be as per data supplied/available, to be properly installed and to be fully effective.
4. This tower has been analyzed according to the original design criteria or the minimum design wind loads recommended by the Telecommunications Industry Association Standard EIA/TIA-222-F. If the owner or local or state agencies require a higher design wind load, AWS Consulting Engineers, Inc. should be made aware of this requirement.
5. The antenna configuration is as supplied and/or stated in the analysis section. It is assumed to be complete and accurate. All antennas, mounts, coaxial cables and waveguides are assumed to be properly installed and supported as per the manufacturer's requirements.
6. Some assumptions are made regarding antenna and mount sizes and their projected areas based on the best interpretation of the data supplied and the best knowledge of antenna type and industry practice. Miscellaneous items such as antenna mounts etc. have not been structurally verified, 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.
7. The existing foundation is assumed to be in good condition with no structural defects and with no deterioration to its member capacities. The foundation system is assumed to support the structure as originally designed.

EXHIBITS

Section	T1	T2	T3	T4	
Legs	ROHN 2.5 STD	ROHN 2.5 STD	ROHN 2.5 STD	ROHN 2.5 X-STR	
Leg Grade	A572-50	A500-50	A500-50	L 1.75 x 1.75 x 3/16	
Diagonals	L 1.5 x 1.5 x 1/8	L 1 3/4 x 1 3/4 x 1/8	L 1 3/4 x 1 3/4 x 1/8	L 1.75 x 1.75 x 3/16	
Diagonal Grade		A36	A36		
Top Girts	L 1.5 x 1.5 x 1/8		N.A.		
Face Width (ft)	4.5	6.5	6.5	6.5	
# Panels @ (ft)	10 @ 3.86667	4 @ 4.83333	4 @ 4.83333	3 @ 6.44444	
Weight (K)	0.6	0.5	0.7	0.9	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA 171063/8BF (Verizon)	79	RRH2x40 (Verizon)	77
BXA 171063/8BF (Verizon)	79	DB-T1-6Z (Verizon)	77
BXA 171063/8BF (Verizon)	79	(6) FD9R6004/2C-3L (Verizon)	77
BXA 171063/12CF (Verizon)	79	TMA (ATI)	76
BXA 171063/12CF (Verizon)	79	6'8"x4" Pipe Mount (ATI)	75.5
BXA 171063/12CF (Verizon)	79	TMA (ATI)	75
ALP 7125.16 (ATI)	78.5	6'8"x4" Pipe Mount (ATI)	75
60" panels (ATI)	78.1	ALP 7125.16 (ATI)	75
Stand off Mount	77.33	BXA-70063/4CF (Verizon)	70
Stand off Mount	77.33	(2) BXA-70063-6CF (Verizon)	70
RRH2x40 (Verizon)	77	(2) BXA-80063/6CF (Verizon)	70
RRH2x40 (Verizon)	77	BXA-80063/4CF (Verizon)	70

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A500-50	50 ksi	62 ksi
A36	36 ksi	58 ksi			

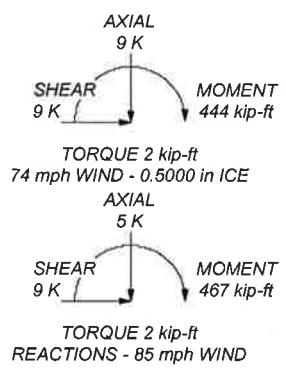
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 97%

MAX. CORNER REACTIONS AT BASE:

DOWN: 53 K
SHEAR: 6 K

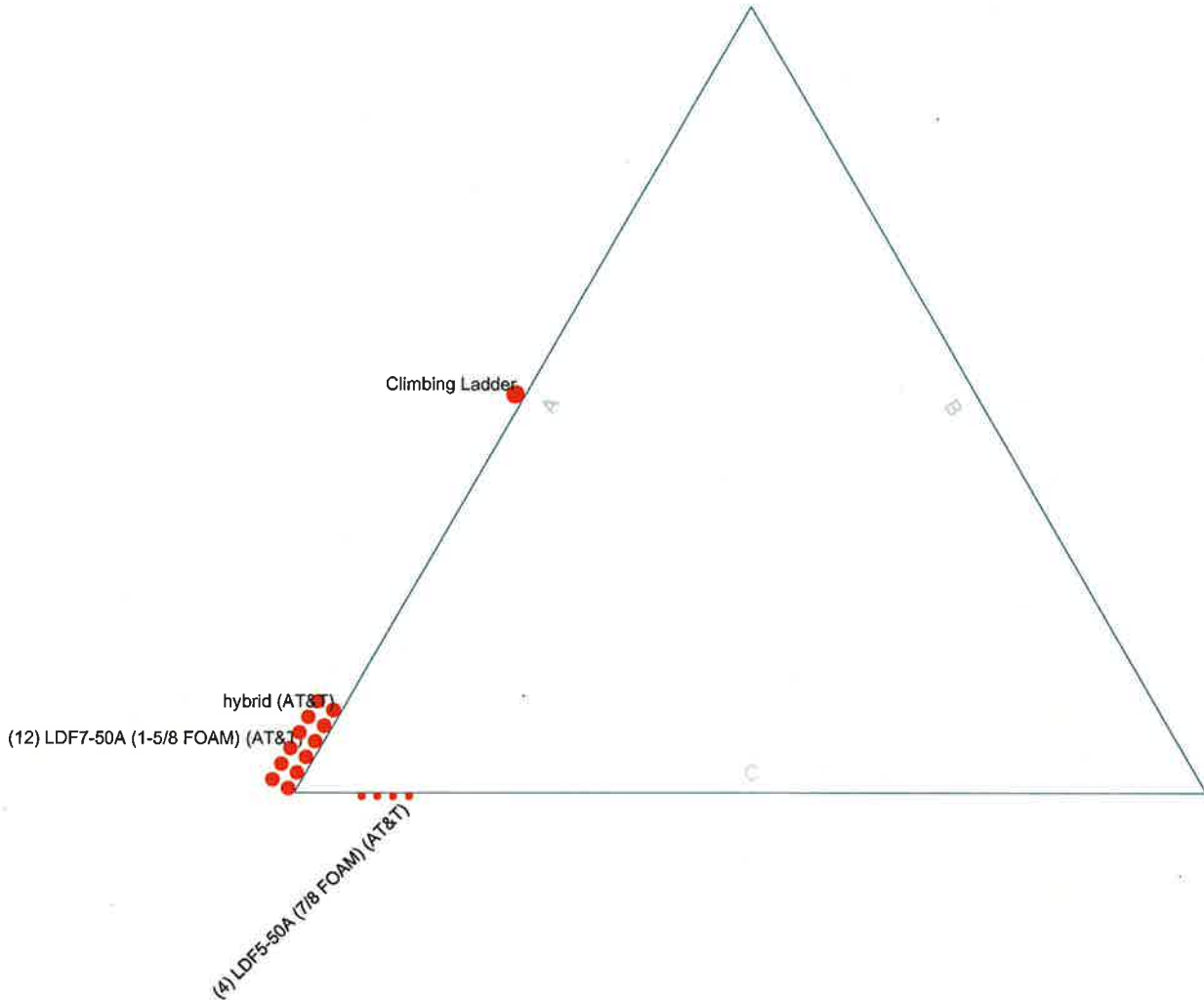
UPLIFT: -48 K
SHEAR: 5 K



AWS Consulting Engineers, LLC 8613 Orchard Hill Drive Plano, TX 75025 Phone: FAX:	Job: 80' SST in Fairfield, CT		
	Project: CT1191		
	Client: Florida Tower Partners	Drawn by: SD	App'd:
	Code: TIA/EIA-222-F	Date: 06/27/14	Scale: NTS
	Path: C:\Users\jbs254\Documents\2014\2014-06-27\80' SST in Fairfield, CT\1118112x250-85T.dwg		Dwg No: E-1

Feed Line Plan

Round
 Flat
 App In Face
 App Out Face



AWS Consulting Engineers, LLC		Job: 80' SST in Fairfield, CT	
8613 Orchard Hill Drive		Project: CT1191	
Plano, TX 75025		Client: Florida Tower Partners	Drawn by: SD
Phone:		Code: TIA/EIA-222-F	Date: 06/24/14
FAX:		Path: c:\Users\shad@aws\Google Drive\2014\Towers\80' SST in Fairfield, CT\1191\Feed\222 SST.F	Scale: NTS
			Dwg No. E-7

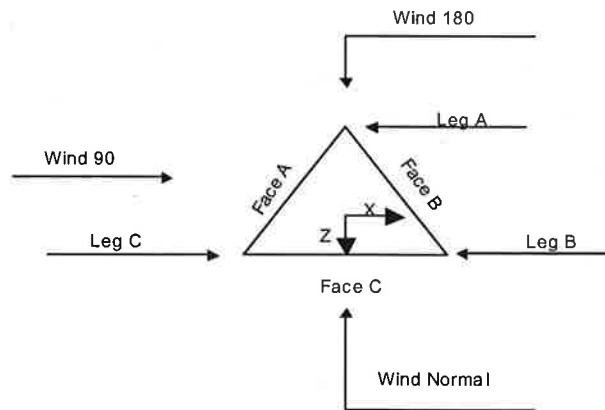
tnxTower AWS Consulting Engineers, LLC 8613 Orchard Hill Drive Plano, TX 75025 Phone: FAX:	Job 80' SST in Fairfield, CT	Page 1 of 9
	Project CT1191	Date 09:24:12 06/27/14
	Client Florida Tower Partners	Designed by SD

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 80.00 ft above the ground line.
 The base of the tower is set at an elevation of 0.00 ft above the ground line.
 The face width of the tower is 4.50 ft at the top and 10.50 ft at the base.
 This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 74 mph is used in combination with ice.
- Temperature drop of 30 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Triangular Tower

Tower Section Geometry

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Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	80.00-60.00			4.50	1	20.00
T2	60.00-40.00			4.50	1	20.00
T3	40.00-20.00			6.50	1	20.00
T4	20.00-0.00			8.50	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	80.00-60.00	3.87	X Brace	No	No	4.0000	4.0000
T2	60.00-40.00	3.87	X Brace	No	No	4.0000	4.0000
T3	40.00-20.00	4.83	X Brace	No	No	4.0000	4.0000
T4	20.00-0.00	6.44	X Brace	No	No	4.0000	4.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 80.00-60.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T2 60.00-40.00	Pipe	ROHN 2 STD	A500-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T3 40.00-20.00	Pipe	ROHN 2.5 STD	A500-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T4 20.00-0.00	Pipe	ROHN 2.5 X-STR	A500-50 (50 ksi)	Single Angle	L 1.75 x 1.75 x 3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
ft						
T1 80.00-60.00	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T2 60.00-40.00	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry (cont'd)

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
T1 80.00-60.00	1.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 60.00-40.00	1.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 40.00-20.00	1.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 20.00-0.00	1.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1 80.00-60.00	Yes	No	1	1	1	1	1	1	1	1
T2 60.00-40.00	Yes	No	1	1	1	1	1	1	1	1
T3 40.00-20.00	Yes	No	1	1	1	1	1	1	1	1
T4 20.00-0.00	Yes	No	1	1	1	1	1	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

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	Client Florida Tower Partners	Designed by SD

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
				Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 80.00-60.00	Flange	0.6250 A325N	4	0.5000 A449	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 60.00-40.00	Flange	0.6250 A325N	4	0.5000 A449	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 40.00-20.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0
T4 20.00-0.00	Flange	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A (7/8 FOAM) (AT&T)	C	Yes	Ar (CfAe)	78.00 - 6.00	4	4	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM) (AT&T)	A	Yes	Ar (CfAe)	77.00 - 6.00	12	6	0.5200	1.9800		0.82
hybrid (AT&T)	A	Yes	Ar (CfAe)	77.00 - 6.00	1	1	0.5200	1.9800		0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	80.00-60.00	A	23.669	0.000	0.000	0.000	0.18
		B	0.000	0.000	0.000	0.000	0.00
		C	6.540	0.000	0.000	0.000	0.02
T2	60.00-40.00	A	27.846	0.000	0.000	0.000	0.21
		B	0.000	0.000	0.000	0.000	0.00
		C	7.267	0.000	0.000	0.000	0.03
T3	40.00-20.00	A	27.846	0.000	0.000	0.000	0.21
		B	0.000	0.000	0.000	0.000	0.00
		C	7.267	0.000	0.000	0.000	0.03
T4	20.00-0.00	A	19.492	0.000	0.000	0.000	0.15
		B	0.000	0.000	0.000	0.000	0.00
		C	5.087	0.000	0.000	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	80.00-60.00	A	0.500	8.443	18.059	0.000	0.000	0.51
		B		0.000	0.000	0.000	0.000	0.00
		C		12.540	0.000	0.000	0.000	0.09
T2	60.00-40.00	A	0.500	9.933	21.246	0.000	0.000	0.60

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	Client Florida Tower Partners	Designed by SD

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T3	40.00-20.00	B	0.500	0.000	0.000	0.000	0.000	0.00
		C		13.933	0.000	0.000	0.000	0.10
		A		9.933	21.246	0.000	0.000	0.60
T4	20.00-0.00	B	0.500	0.000	0.000	0.000	0.000	0.00
		C		13.933	0.000	0.000	0.000	0.10
		A		6.953	14.872	0.000	0.000	0.42
		B		0.000	0.000	0.000	0.000	0.00
		C		9.753	0.000	0.000	0.000	0.07

Feed Line Shielding

Section	Elevation ft	Face	A_R ft ²	A_R Ice ft ²	A_F ft ²	A_F Ice ft ²
T1	80.00-60.00	A	0.000	1.546	1.741	2.318
		B	0.000	0.000	0.000	0.000
		C	0.000	0.741	0.580	1.112
T2	60.00-40.00	A	0.000	1.702	1.917	2.553
		B	0.000	0.000	0.000	0.000
		C	0.000	0.771	0.603	1.156
T3	40.00-20.00	A	0.000	1.223	1.606	2.139
		B	0.000	0.000	0.000	0.000
		C	0.000	0.554	0.505	0.969
T4	20.00-0.00	A	0.000	0.651	0.856	1.140
		B	0.000	0.000	0.000	0.000
		C	0.000	0.295	0.269	0.516

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C_{AA} Front ft ²	C_{AA} Side ft ²	Weight K	
ALP 7125.16 (AT&T)	B	From Leg	3.00	0.0000	75.00	No Ice	8.75	8.75	0.02
			0.00			1/2" Ice	9.25	9.25	0.02
60" panels (AT&T)	B	From Leg	3.00	0.0000	78.10	No Ice	5.25	3.26	0.04
			0.00			1/2" Ice	5.70	3.64	0.07
TMA (AT&T)	B	From Leg	3.00	0.0000	75.00	No Ice	0.67	0.31	0.01
			0.00			1/2" Ice	0.79	0.39	0.02
6'8"x4" Pipe Mount (AT&T)	B	From Leg	1.50	0.0000	75.00	No Ice	2.60	2.60	0.07
			0.00			1/2" Ice	3.01	3.01	0.09
6'8"x4" Pipe Mount (AT&T)	A	From Leg	1.50	0.0000	75.50	No Ice	2.60	2.60	0.07
			0.00			1/2" Ice	3.01	3.01	0.09
ALP 7125.16	A	From Leg	3.00	0.0000	78.50	No Ice	8.75	8.75	0.02

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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	K
(AT&T)			0.00			1/2" Ice	9.25	9.25	0.02
TMA	B	From Leg	0.00		0.0000	No Ice	0.67	0.31	0.01
(AT&T)			3.00			1/2" Ice	0.79	0.39	0.02
			0.00						

(2) BXA-70063-6CF	A	From Leg	4.00		0.0000	No Ice	7.73	4.16	0.02
(Verizon)			0.00			1/2" Ice	8.27	4.60	0.06
			0.00						
(2) BXA-80063/6CF	B	From Leg	4.00		0.0000	No Ice	7.74	3.76	0.01
(Verizon)			0.00			1/2" Ice	8.28	4.20	0.06
			0.00						
BXA 171063/8BF	A	From Leg	4.00		0.0000	No Ice	3.10	2.16	0.01
(Verizon)			0.00			1/2" Ice	3.43	2.46	0.03
			0.00						
BXA 171063/8BF	B	From Leg	4.00		0.0000	No Ice	3.10	2.16	0.01
(Verizon)			0.00			1/2" Ice	3.43	2.46	0.03
			0.00						
BXA 171063/8BF	C	From Leg	4.00		0.0000	No Ice	3.10	2.16	0.01
(Verizon)			0.00			1/2" Ice	3.43	2.46	0.03
			0.00						
BXA-80063/4CF	C	From Leg	4.00		0.0000	No Ice	5.16	2.25	0.01
(Verizon)			0.00			1/2" Ice	5.55	2.55	0.04
			0.00						
BXA-70063/4CF	C	From Leg	4.00		0.0000	No Ice	7.73	4.16	0.02
(Verizon)			0.00			1/2" Ice	8.27	4.60	0.06
			0.00						
BXA 171063/12CF	A	From Leg	4.00		0.0000	No Ice	4.79	3.62	0.02
(Verizon)			0.00			1/2" Ice	5.24	4.06	0.04
			0.00						
BXA 171063/12CF	B	From Leg	4.00		0.0000	No Ice	4.79	3.62	0.02
(Verizon)			0.00			1/2" Ice	5.24	4.06	0.04
			0.00						
BXA 171063/12CF	C	From Leg	4.00		0.0000	No Ice	4.79	3.62	0.02
(Verizon)			0.00			1/2" Ice	5.24	4.06	0.04
			0.00						
RRH2x40	A	From Leg	4.00		0.0000	No Ice	2.18	1.40	0.05
(Verizon)			0.00			1/2" Ice	2.38	1.58	0.06
			0.00						
RRH2x40	B	From Leg	4.00		0.0000	No Ice	2.18	1.40	0.05
(Verizon)			0.00			1/2" Ice	2.38	1.58	0.06
			0.00						
RRH2x40	C	From Leg	4.00		0.0000	No Ice	2.18	1.40	0.05
(Verizon)			0.00			1/2" Ice	2.38	1.58	0.06
			0.00						
DB-T1-6Z	A	From Leg	4.00		0.0000	No Ice	2.70	2.70	0.05
(Verizon)			0.00			1/2" Ice	3.10	3.10	0.07
			0.00						
(6) FD9R6004/2C-3L	C	From Leg	4.00		0.0000	No Ice	0.38	0.38	0.03
(Verizon)			0.00			1/2" Ice	0.80	0.80	0.06
			0.00						
Stand off Mount	A	From Leg	2.00		0.0000	No Ice	8.50	3.00	0.25
			0.00			1/2" Ice	10.50	4.50	0.34
			0.00						
Stand off Mount	B	From Leg	2.00		0.0000	No Ice	8.50	3.00	0.25
			0.00			1/2" Ice	10.50	4.50	0.34
			0.00						

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Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T1	80 - 60	ROHN 2 STD	20.00	3.87	58.9 K=1.00	22.896	1.0745	-15.81	24.60	0.643
T2	60 - 40	ROHN 2 STD	20.03	3.87	59.0 K=1.00	22.880	1.0745	-29.99	24.58	1.220
T3	40 - 20	ROHN 2.5 STD	20.03	4.84	61.3 K=1.00	22.491	1.7040	-42.03	38.33	1.097
T4	20 - 0	ROHN 2.5 X-STR	20.03	6.46	83.8 K=1.00	18.236	2.2535	-53.15	41.10	1.293

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T1	80 - 60	L 1.5 x 1.5 x 1/8	5.93	2.73	113.0 K=1.02	11.262	0.3594	-2.20	4.05	0.544
T2	60 - 40	L 1.5 x 1.5 x 1/8	7.37	3.58	145.0 K=1.00	7.105	0.3594	-1.50	2.55	0.587
T3	40 - 20	L1 3/4x1 3/4x1/8	9.54	4.67	161.5 K=1.00	5.725	0.4219	-1.66	2.42	0.687
T4	20 - 0	L 1.75 x 1.75 x 3/16	12.02	5.95	208.1 K=1.00	3.450	0.6211	-2.01	2.14	0.938

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Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T1	80 - 60	L 1.5 x 1.5 x 1/8	4.50	4.09	165.9 K=1.00	5.428	0.3594	-0.04	1.95	0.021
T2	60 - 40	L 1.5 x 1.5 x 1/8	4.53	4.34	154.2 K=0.88	6.278	0.3594	-0.24	2.26	0.105

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Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P/P _a
T1	80 - 60	ROHN 2 STD	20.00	0.33	5.1	30.000	1.0745	14.14	32.24	0.439
T2	60 - 40	ROHN 2 STD	20.03	0.33	5.1	30.000	1.0745	27.54	32.24	0.854
T3	40 - 20	ROHN 2.5 STD	20.03	0.33	4.2	30.000	1.7040	38.59	51.12	0.755
T4	20 - 0	ROHN 2.5 X-STR	20.03	0.33	4.3	30.000	2.2535	48.51	67.61	0.717

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P/P _a
T1	80 - 60	L 1.5 x 1.5 x 1/8	5.93	2.73	73.2	29.000	0.2109	2.24	6.12	0.366
T2	60 - 40	L 1.5 x 1.5 x 1/8	6.11	2.96	79.0	29.000	0.2109	1.74	6.12	0.284
T3	40 - 20	L1 3/4x1 3/4x1/8	9.54	4.67	104.9	29.000	0.2578	1.72	7.48	0.229
T4	20 - 0	L 1.75 x 1.75 x 3/16	12.02	5.95	135.4	29.000	0.3779	1.89	10.96	0.172

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P/P _a
T1	80 - 60	L 1.5 x 1.5 x 1/8	4.50	4.09	111.0	29.000	0.2109	0.04	6.12	0.007
T2	60 - 40	L 1.5 x 1.5 x 1/8	4.53	4.34	111.8	21.600	0.3594	0.22	7.76	0.028

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
T1	80 - 60	Leg	ROHN 2 STD	3	-15.81	32.80	48.2	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail	
		Diagonal	L 1.5 x 1.5 x 1/8	9	-2.20	5.40	40.8	Pass	
T2	60 - 40	Top Girt	L 1.5 x 1.5 x 1/8	5	-0.04	2.60	61.8 (b)	Pass	
		Leg	ROHN 2 STD	39	-29.99	32.77	1.6	Pass	
		Diagonal	L 1.5 x 1.5 x 1/8	45	-1.50	3.40	91.5	Pass	
							44.0	Pass	
							48.0 (b)		
T3	40 - 20	Top Girt	L 1.5 x 1.5 x 1/8	40	-0.24	3.01	7.9	Pass	
		Leg	ROHN 2.5 STD	75	-42.03	51.09	82.3	Pass	
T4	20 - 0	Diagonal	L1 3/4x1 3/4x1/8	78	-1.66	3.22	51.5	Pass	
		Leg	ROHN 2.5 X-STR	102	-53.15	54.78	97.0	Pass	
		Diagonal	L 1.75 x 1.75 x 3/16	106	-2.01	2.86	70.3	Pass	
							Summary		
							Leg (T4)	97.0	Pass
							Diagonal (T4)	70.3	Pass
							Top Girt (T2)	7.9	Pass
							Bolt Checks	61.8	Pass
							RATING =	97.0	Pass